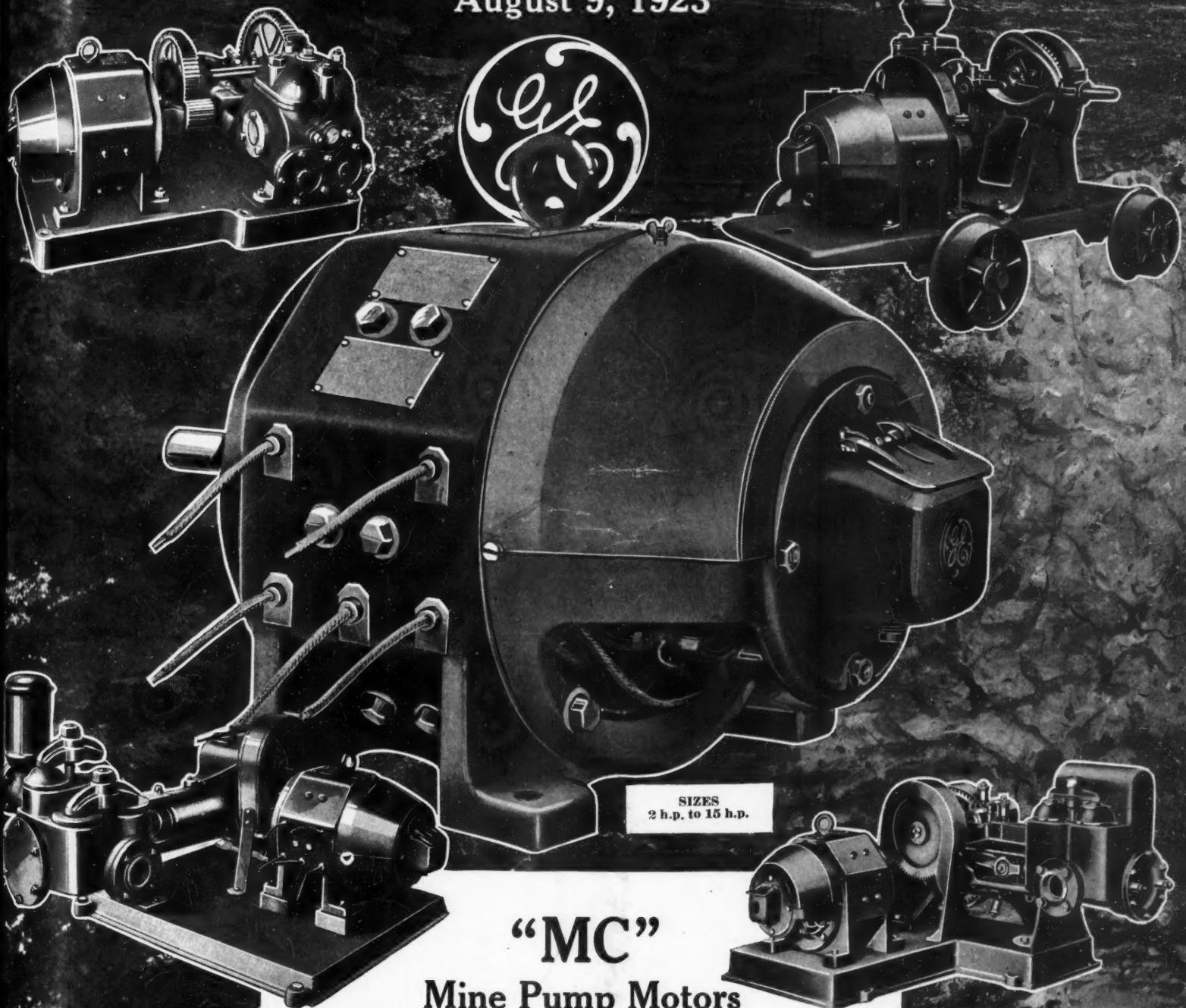


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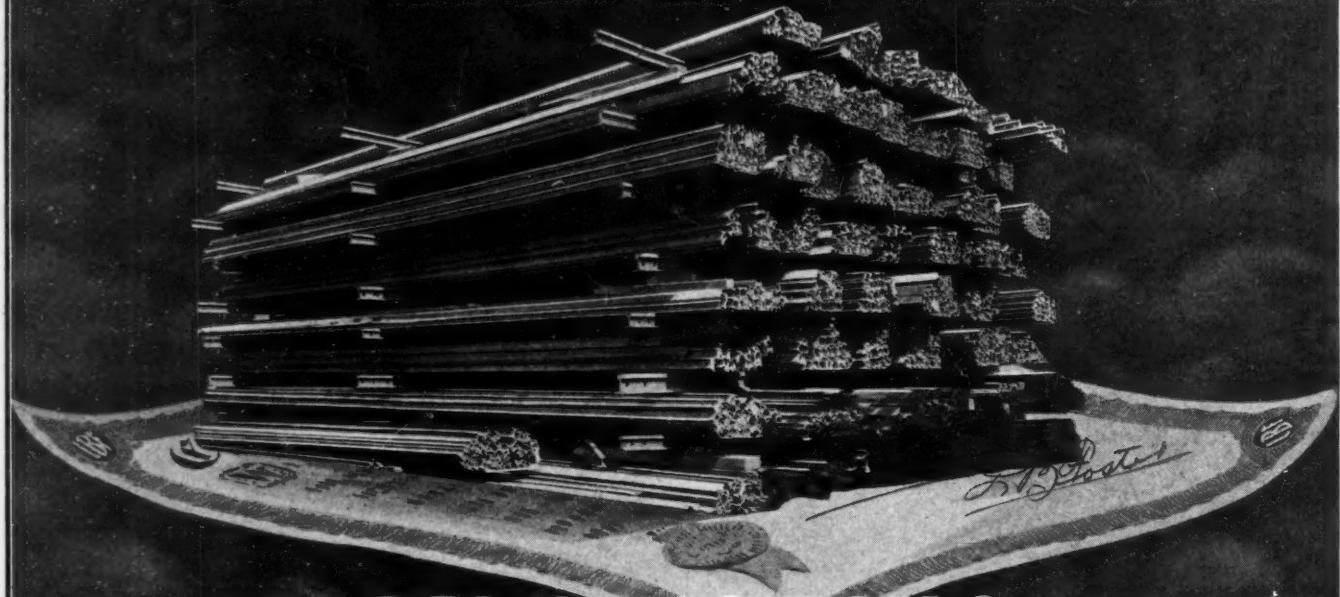
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COAL AGE

The Only National Paper Devoted to Coal Mining and Coal Marketing

C. E. LESHER, Editor

Volume 24

NEW YORK, AUGUST 9, 1923

Number 6

Death of the President

RECONSTRUCTION after the War or "the return to normalcy," as he preferred to term it, was the task of President Harding and admirably he performed it. With many a European country on the verge of bankruptcy as the result of taking the short and easy way of spending money in excess of yearly income we can appreciate the better the saner and more honest way of President Harding, which avoided inflation and the building of debts as being neither upright nor profitable. Working men and capitalists alike should appreciate the fact that by careful pruning of governmental expenses the Cabinet led by President Harding has kept our dollars from further depreciation in value even though we are a long way from the pre-war basis.

Nor was he less fortunate in his foreign affairs. We had fairly started, about the time he became President, on what we discovered was to be a race of armament. Our big construction had begun to arouse doubts in the mind of another nation, when with the sanity inspired by President Harding and Secretary of State Hughes, international disarmament was provided and a race that would have been expensive and exhausting to the participants and likely to end in another war was definitely halted.

These were two of President Harding's achievements. Too many of his other policies are footballs of politics and therefore cannot be mentioned here. Reference should, however, be made to his quality as a man. Throughout his administration not a breath of scandal was uttered against his actions or his purposes. His quiet dignity, his democracy, that was real without being demonstrative, his patience, his calmness, the sincerity of his smile, his ability to make friends with the Senate and House and his freedom from petty jealousies endeared him to the public.

His Presidential messages were not compositions of literary merit but he proved, as many men before him have done that power of execution often goes with a weakness in the power of expression. The deceased President was before all an executive. He looked well ahead, he got things done, he did them without fluster, he leaves his successor the management of a state, meeting its obligations readily, paying off its debts systematically and free from foreign complications or ill will.

But these labors were not accomplished without a superhuman burden being placed on the man that performed them. Our President is unfortunately for his health and well being both the titular and actual head of our Government. He must do the honors as well as direct the work of the nation. In foreign countries the monarch takes care of the one and the prime minister of the other. But even then, the King is freer than the president. The dignity that hedges a king saves him from having to meet all and sundry, whereas those

who drift to our national capital cannot leave until they have paid their respects to the President. Only after this has been achieved can they go back to Podunk and discuss the warmth of the handshake they received from the great man with their admiring or envious neighbors.

And the prime minister, he is a smaller figure and is surrounded by members of a cabinet any one of whom, owing to the closer accord of parliamentary and cabinet activity abroad, is almost as illustrious as himself. Thus the prime minister can travel from one end of the country to the other without making a single speech. Custom has made it possible for him to disappear from the public eye, but every journey of the President is now a long series of ovations, banquets, handshakings and speeches. He hardly knows night from day.

Mr. Harding, it is true, had in his cabinet two men who were at the time of their appointment better known than himself, but that did not upset the Constitution which makes the President the sole executive or the tradition which makes him the leading figure in our national life.

Much of our trouble comes from custom, and a breaking of precedent and the formation of new customs must cure it. The public must be content to dispense with courtesies and activities that broke the voice of Roosevelt, destroyed the health of Wilson and proved fatal to Harding.

The Anthracite Dispute

MANY things may happen between the first and last weeks of August. Although the anthracite mine workers have thrown down the gauntlet, saying they will not further discuss a contract to work after this one expires on Aug. 31 unless the operators forthwith grant the first of their demands—that for the check-off—they may change their minds. In fact there is a well-grounded belief in the trade and government circles that the men at the mines are more interested in wage increases accruing to their benefit than in the check-off, which is for the ultimate aggrandizement of the union officials. It is quite possible the union, finding the operators in a determined position on this issue, may shift at the last moment and offer to accept a compromise in the way of a wage increase. That, however, is pure speculation, for no one now knows even what the next move is to be. John Lewis has remained at Atlantic City awaiting developments; the operators are near by at Philadelphia. Negotiations can be immediately renewed at the suggestion of either party. Each is waiting for the other to weaken; both are waiting to see if the government will act to bring them back together.

For the time being the check-off is before the country. It is an obscure issue, one on which we may wait a

long time before there is a definite expression of public feeling. The term is familiar to people generally, for it was widely advertised as an issue in the 1922 soft coal strike, but after all a minor issue and one that did not figure in the final settlement last year. The soft coal operators then tried to throw it out and of course failed. They tried to have it rejected in the settlement of the 1919 strike, but the Robinson Commission did not act on it.

The union now professes not to understand why there should be objections on the part of the anthracite operators to granting the check-off in the hard-coal region. It is such a small matter—just deducting \$1 a month from each man's pay. John Lewis in the *New York Times* of Sunday, Aug. 5, puts it thus: "This check-off is merely an arrangement whereby the individual mine worker may have his monthly dues to the union, amounting to \$1, deducted from his earnings in the same manner as the operators deduct money for store bills, explosives, rent, house coal, tools, mine supplies, taxes and funds for beneficiary organizations." On such a simple thing, he says, the operators would plunge the industry into a strike and deprive the people of coal.

That is all there was to the check-off some thirty years ago when the soft-coal operators began its collection in Ohio. If that were all there were to it today, the soft-coal operators would not be opposing it, nor would the union be so keen for it in the anthracite region. The check-off has changed, however, and now is the instrument whereby the United Mine Workers' organization draws millions of dollars each year to finance the most arrogant labor monopoly in this country. For it is not the simple matter of \$1 per man per month that Mr. Lewis states. The check-off agreement covers the collection of special assessments as well, and these in the soft-coal fields have amounted to many times that sum from each man over considerable periods, not for the payment of checkweighman's and union official's salaries and beneficiary payments for miners' families, but for the international organization with which to fight in organizing non-union fields and defending law suits and criminal proceedings, as at Herrin. By collecting the check-off, in amounts as ordered by the union, the operators are handing to the union the sinews of war with which to fight them.

There is no reason why the hard-coal operators should begin the practice now. To refuse it is not a denial of the right to organize. It is not a question of dealing with a union for they do already deal with it in all respects. It is a matter of principle and of policy. The check-off denies to any man the right to work in the coal mines unless he joins the union, and thereby is in violation of the principle that every man should have the unquestioned right to work without joining a union.

The practical operation of extending the check-off to the hard-coal region will be to still further extend the power of the United Mine Worker without in the least adding to its usefulness. Perhaps if the American public would understand and express itself on this as a matter of policy, the issue would not long be obscured or the result in doubt.

To THE FRENCH R.U.H.R. must stand for Remain Until Huns Remit.—*Quincy Herald*.

LOOKS AS IF CONGRESS is getting ready for a Bloc party.—*Brooklyn Eagle*.

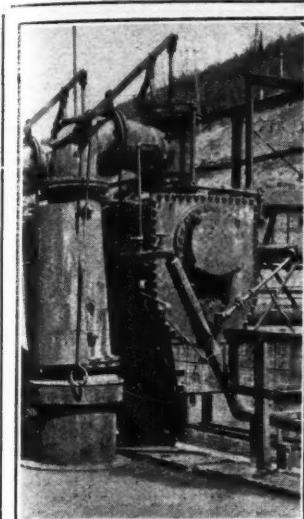
Psychology for the Coal Merchant

PROBLEMS of retail and wholesale distribution will be studied by secretaries of commercial organizations and trade associations at the coming meeting of the National School for Commercial and Trade Executives at Northwestern University in the last half of August. This institution, fostered by the Chamber of Commerce of the United States, seeks to spread the knowledge of sound practice in merchandising and distribution—literally to make better merchants. It is inviting all who may be interested to attend this meeting. Among other matters to be considered are ways and means of accurately surveying the wholesale and purchasing power and capacity of towns and cities. It is not announced that coal will be specifically covered, but it should be.

Retail coal merchants know only too well that their line does not stand as high in the estimation of the public or in the scale of merchandising as most other local enterprises. Coal as a necessity is not sold, it is bought. It is a commodity the retail end of whose distribution is too generally a "come and get it" business. The coal merchant's office more generally than not is a small, dark coop—dirty, dusty, uninviting. Sensing the distrust of the buyer, the dealer, from behind his partition, more forbidding than that of a bank president, armors himself with a frown and growl to forestall the complaints or worse of the customer who risks entrance. The meeting at Northwestern University will give a course in salesmanship and another in psychology that might with advantage be extended to cover the coal trade.

A course in economics such as will be given there would further enlighten the local merchant why business often is so poor. There are too many in the game too poorly financed. The retail coal trade is as over-developed as the soft-coal producing industry, and for the same specific reasons. The exceptions to the general run prove the possibilities of what have come in general business to be accepted as sound merchandising practice and it is to be hoped that secretaries of local and other retail coal merchants' associations will participate in the coming sessions of the National School for Commercial and Trade Executives. The coal industry as a whole will benefit by the strengthening of this link between the mine and the consumer—not that the other links are as strong as they might be.

SETTLING A COAL CONTRACT DISPUTE FOR FIVE DOLLARS in a court of law is a happy experience in economics that probably no coal man ever had. Even if only a single car of coal worth \$150 is involved, the cost of litigation mounts to a figure sometimes out of all proportion to the value of the goods. The result is that many a coal shipper takes a crooked deal from a buyer, charges his loss to experience, and remains out of court. But if an arbitration clause were written into every coal contract and a working system of arbitration were set up in the coal industry there is no reason to suppose that costs would be much, if any, greater than the costs in the Commerce Court now settling business arguments in Chicago. There the scale is \$5 where the matter in contest does not exceed \$200; \$7.50 from \$200 to \$1,000, and \$10 from \$1,000 up plus 1 per cent or 1½ per cent per \$1,000 above the first \$1,000. This is cheap justice.



Hydraulic Main



Sulphate Storage

From Coke Oven to Byproduct Market, Rosedale Refinery

Decanting the Tar—Taking Ammonia and Benzol from the Gas—Adding Ammonia to Sulphuric Acid to Make Ammonium Sulphate

BY G. A. RICHARDSON*
Philadelphia, Pa.

AT THE Rosedale plant of the Cambria Steel Co., near Johnstown, Pa., the byproduct-recovery equipment is as follows:

4 Primary coolers	3 Acid separators
4 Exhausters	1 Ammonia still (for weak NH ₃ liquor)
2 Gas boosters; one, being interchangeable, can be used as an exhauster	3 Final coolers
3 Tar extractors	3 Absorbers
3 Saturators	1 Gas holder
	3 Light-oil stills

At Rosedale the practice is to use all the ammonia produced by the coke ovens for the manufacture of ammonium sulphate, condensing apparatus not having been installed. Room has been provided for it, however, and the procedure, if a plant were supplied, would be the same as that followed at the Franklin plant, which will be described later. Light oil is refined at Franklin, and all that produced at Rosedale is shipped to that plant.

The gas from the ovens enters a drum immediately above them. Here it is brought in contact with a spray of weak ammonia or byproduct-house liquor which washes out a large part of the tar. The gas and liquor then flows across through collector mains into the common foul-gas, or suction, main. Where room permits, the tarry liquor is bypassed into the bottom of the common main with the aid of a butterfly valve. The reason for this is that the water, etc., coming over and into the top of the main with the gas, tends to disturb the suc-

tion. Owing to lack of headroom, the two leads at the upper end of the batteries do not have this bypass.

The common foul-gas main slopes downward toward the primary coolers, increasing in size by sections until it attains a maximum diameter of 78 in. Diaphragm expansion joints are provided, and bleeder valves are placed at various points along the main to take care of excess tar water in case the main should clog.

A tar valve, located close by the primary coolers, is used to drain the tar water from the main into the decanters. These latter are rectangular tanks. By the side of the decanter is a liquor-collecting tank and a tar-collecting tank, both cylindrical.

The weak liquor coming back from the ovens has been increased in volume about 6 to 7 per cent by the moisture in the coal. From the liquor-collecting tank weak liquor is sent back to the ovens, and again sprayed into the mains. Any excess passes off over a weir and is sent to the weak-liquor decanter, where any tar that is still left in it settles and is taken to the dehydrator. The excess weak liquor is pumped to collector tanks and thence to the storage tanks.

The tar overflows from the tar-collecting tank into the tar dehydrator, where steam coils drive off the moisture. From the dehydrator it is pumped into the storage tank, which is in the same group as the liquor tanks. Much of this is used for fuel in the various parts of the steel works and the surplus remaining is sold in the market. No attempt is made to refine it at this place.

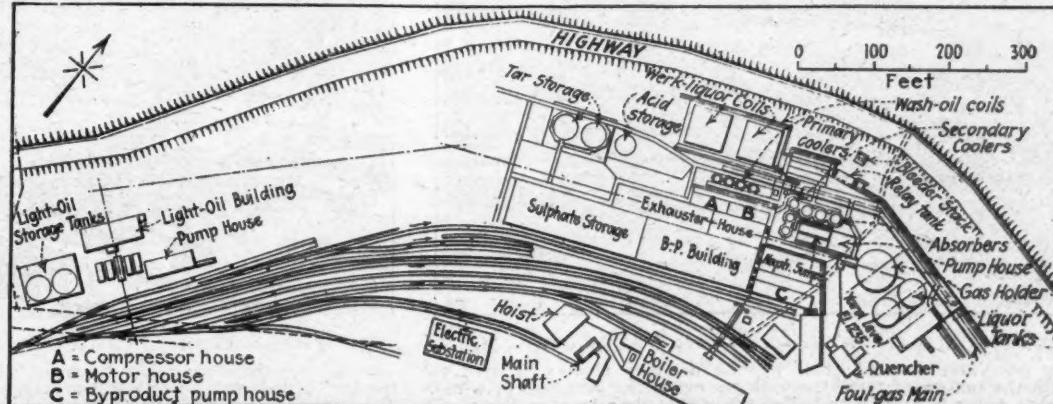
Gas from the foul-gas main passes first into the primary coolers. There are four of these connected in parallel. They are filled with wooden grids. Weak

NOTE—This is the fifth of a series of six articles on the mines, ovens and byproduct refineries of the Cambria Steel Co. Earlier articles appeared Aug. 31 and Sept. 7, 1922, Feb. 15 and July 19, 1923.

*Midvale Steel & Ordnance Co. and Cambria Steel Co. Since this article was received these two companies have merged with the Bethlehem Steel Co.

FIG. 1
Rosedale
Byproduct
Plant

The gas comes in the foul-gas main with water and tar. The treatment consists in separating the ammonia liquor, the tar and the gas and taking the ammonia from the gas and from the ammonia liquor to make ammonium sulphate, and in removing the benzol from the gas.



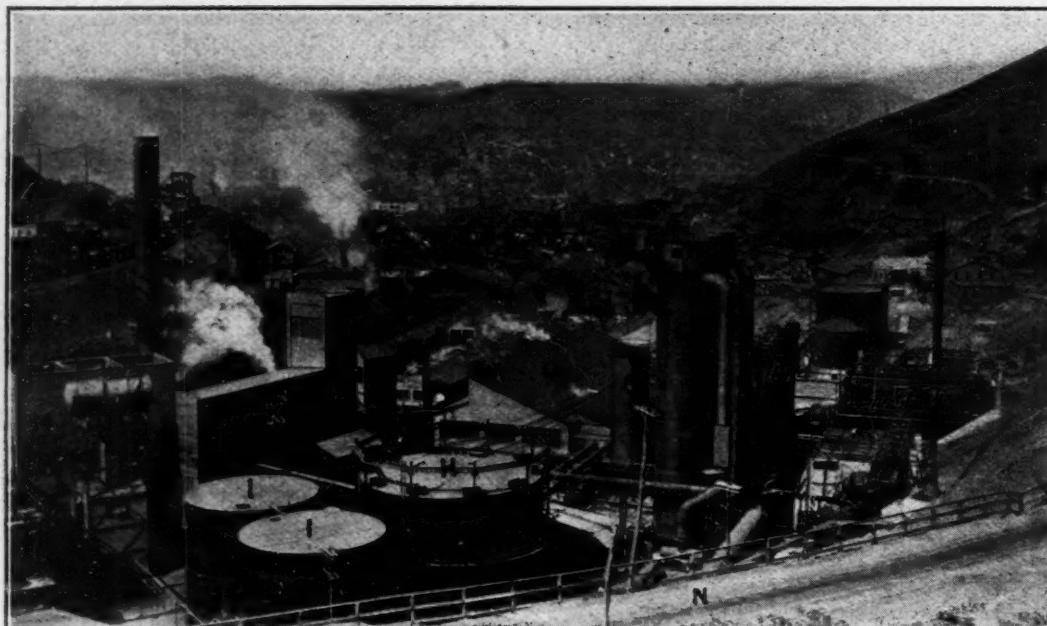


FIG. 2

Panorama
of Plant

A shows the four primary coolers; *B*, one of the final coolers; *C*, the three absorbers; *D*, two tar storage tanks; *G*, one acid storage tank; *H*, the gas tank; *I*, the liquor tanks; *K*, the boiler house; *M*, the quenching tower; *N*, the new Hinckston roadway and *O*, the byproduct building.

ammonia liquor trickles down from the top and washes the excess tar out of the ascending gas and at the same time reduces its temperature. Practically all the tar and naphthalene are separated out in the process. When all the ovens are operating at least three of the coolers are required.

The tar drops down into a reservoir at the base of the coolers, any excess overflowing and draining to the decanters. The circulation of the liquor is continuous. After passing down through the coolers it is pumped back into cooling coils which are sprayed with water, and thence it passes back to the coolers again. There are 120 stacks of 2-in. coils each 30 pipes high.

The Solvay people make the statement that "due to the difference in rate of heat transfer through metals from water to water and from gas to water the efficiency of the Semet-Solvay coolers is approximately 50 times that of the old type of tubular coolers. It also is of interest to note the well-demonstrated facts that under normal operation these grid-type coolers never require cleaning and that during the entire life of the plant there are no repair costs other than occasional renewals of spray nozzles."

When the gas leaves the ovens it has an average tem-

perature of 600 deg. C. It enters the collector mains at about 400 deg. C. and enters the suction main at about 200 deg. C. When it enters the coolers it has lowered in temperature to about 70 deg. C., and in the coolers it is reduced to about 30 deg. C. About 70 per cent of the tar is condensed in the collector mains, 20 per cent in the suction main and about 8 per cent, consisting, of course, of the lighter tars and watery vapors is collected in the primary coolers. Some naphthalene also is condensed at the same time.

To draw the gas through the primary coolers requires a suction of about 130 mm., or 5 in. For this purpose four exhausters are used which are located just beyond the coolers, in a bay of the sulphate building. There also are two blowers, one of which can be used either as a booster or as an exhauster. The exhausters each have a capacity of 83.4 cu.ft. per revolution. Two are driven by 300-hp. motors and two by 15x22-in. steam engines. A bypass with a butterfly valve is used to regulate the suction. Although this is not the most economical method it is the most satisfactory.

From the exhausters the gas passes through three 22,000,000-cu.ft. capacity tar extractors. In these the gas passes through a screen and impinges on flat sur-

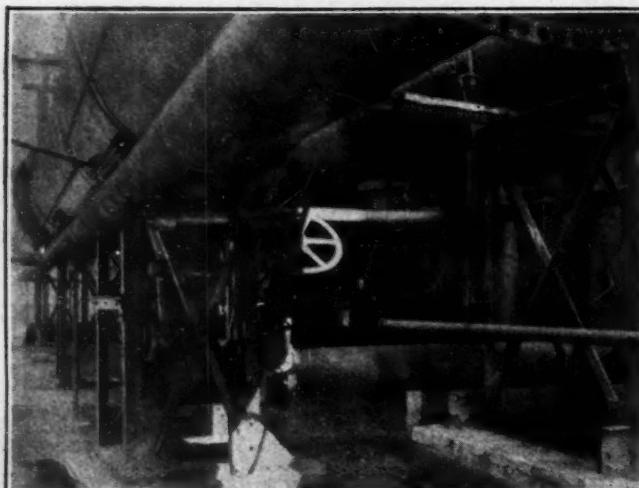


FIG. 3—TAR VALVE REMOVES TAR WATER FROM MAIN

A tar valve located close by the primary coolers is used to drain the tar water from the foul-gas main, the diameter of which at this point is 6 ft. 6 in. The tar water thus leaving the main passes to the decanters.

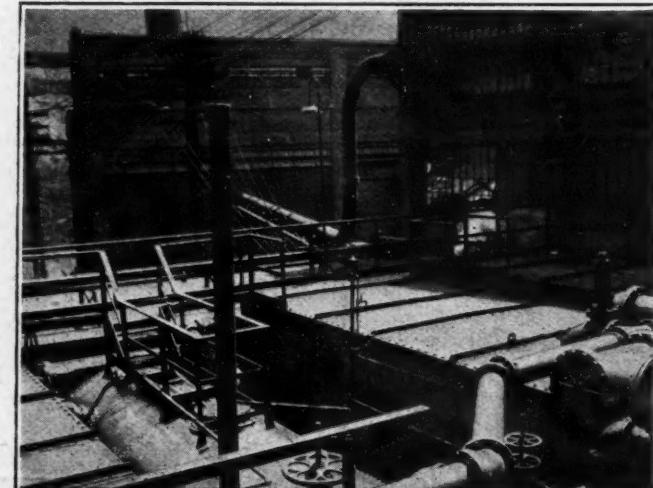


FIG. 4—DECANTERS AND TANK TO HOLD WEAK LIQUOR

In the decanter the weak liquor is separated in a degree from the tar, cylindrical tanks being provided for the reception of both. The weak liquor thus partly purged of its tar is sent back to the ovens to speed the sluggish material in the hydraulic main.

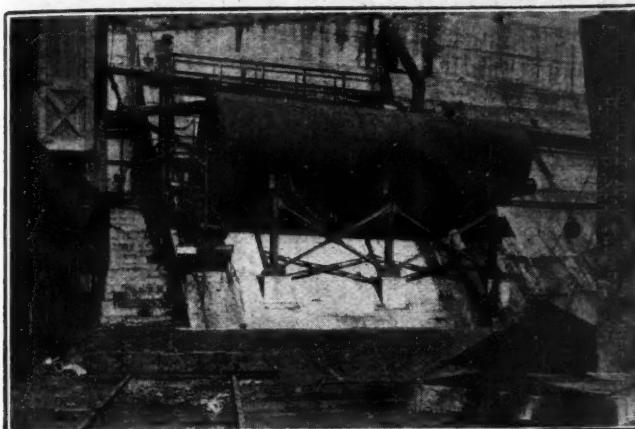


FIG. 5—TAR DEHYDRATOR FOR EVAPORATING WATER

Here steam coils drive off the moisture which went with the tar instead of segregating with the weak liquor. From this point the tar is pumped into one of the storage tanks, two of which can be seen in the plan that accompanies this article.

faces, the tar dropping to the bottom and going direct to the decanters.

The gas itself goes to three ammonia separators, where it enters at the bottom and bubbles up through a bath of sulphuric acid (5 per cent solution). In the resulting reaction ammonium sulphate, $(\text{NH}_3)_2\text{SO}_4$, is formed. The gas passes on to acid separators which contain a series of baffles that cause a mechanical precipitation of the acid which has been carried over with the gas.

After the acid bath has become saturated, crystals of ammonium sulphate fall to the bottom and are thrown out with an air ejector to draining tables in which liquid seals are provided to prevent spattering. The mother liquor overflows and is returned to the saturator.

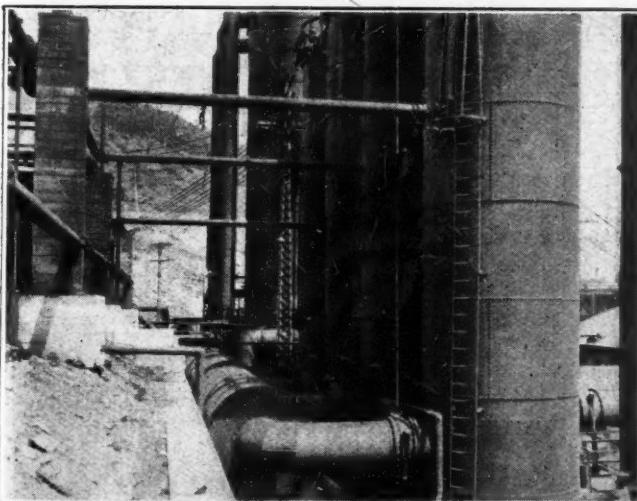


FIG. 6—IN FOREGROUND, FOUR PRIMARY COOLERS

The gas from the foul-gas main passes in parallel from the bottom to the top of these coolers. They are filled with wooden grids. Weak ammonia liquor trickles down from the top and washes excess tar out of the ascending gas. The tar and naphthalene are practically removed, for the temperature is greatly reduced. In the rear are the scrubbers. Note the pipes by which the gas goes in and, on the extreme right, one of the pipes by which the purged gas is withdrawn.

At regular intervals the salt is paddled into centrifugal driers, where it falls into a wire cage and is whirled rapidly.

After the salt has been partly dried it is washed with water, which removes the free acid, the usual practice at Rosedale being to get down to 0.05 per cent moisture. Care is necessary in washing to avoid giving an excess bath to the sulphate. Uniformity in the supply of water

is assured by using a one-gallon tank of water, which is blown into the drier. The drying time is about fifteen minutes. Nine driers are available, there being three for each saturator.

A belt conveyor carries the sulphate, thus dried, to

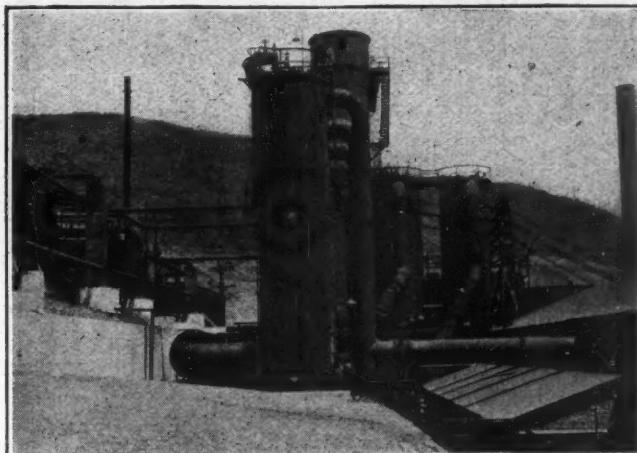


FIG. 7—ANOTHER VIEW OF PRIMARY COOLERS

On the left can be seen the weak-liquor cooling coils and the wash-oil coils. In the middle foreground are the primary coolers (four of them), the top of the scrubbers and the secondary coolers. On the right is the sulphate building.

the sulphate-storage building, which is 176 ft. long by 56 ft. wide and has room for 4,000 tons. The salt is then bagged or loaded into railroad cars in bulk according to requirements.

A feature of the Semet-Solvay system is that ammonia begins to be separated at the collector or hydraulic main, for the liquor which is sprayed at this point, gathers up much of the ammonia and so relieves to a certain extent the load on the coolers and prevents pitch from being deposited in the main. At the same time the fixed ammonia salts are removed. Inasmuch as the overflow from the primary cooler system is returned to the hydraulic-main circulation, it is evident that the overflow from this latter system will contain all the fixed ammonia and but little free ammonia. This, in turn, reduces to a minimum the volume of weak liquor requiring distillation and lowers the cost of ammonia recovery when sulphate is the product desired.

The weak liquor from the storage tanks is brought to a 6-ft. ammonia-tank still, which is large enough to

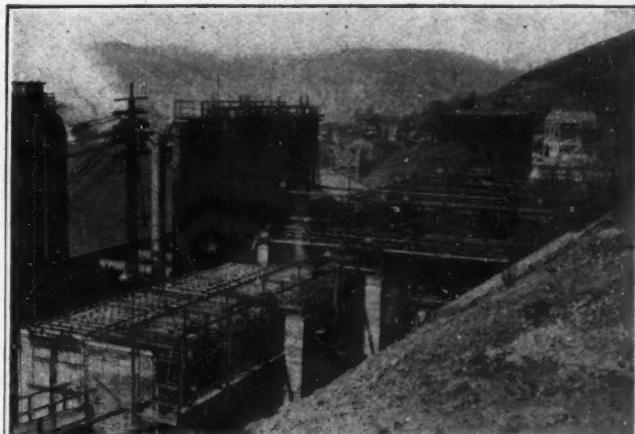


FIG. 8—COILS THAT COOL WASH OIL AND WEAK LIQUOR

The weak-liquor cooling coils are in the right rear. They lower the temperature of the weak liquor so that when it is admitted to the top of the primary coolers it will reduce the temperature of the gas and cause it to discharge its tar and naphthalene. It keeps circulating between the cooling coils and the primary coolers on the left. In the foreground are the wash-oil cooling coils, with the scrubbers on the left.

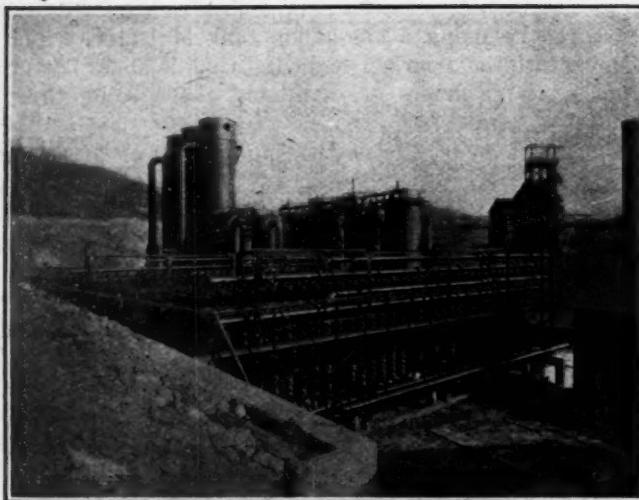


FIG. 9—COOLING COILS FOR PRIMARY COOLERS
On the left can be seen the three tall light-oil absorber towers, two low secondary coolers and in the middle rearround the four primary coolers. In the right rearround is the coal-hoisting shaft.

meet all requirements. The liquor enters a tank at the top of the still and passes down through coils in which it is preheated. From this point it passes through a lime reservoir, where it is mixed with milk of lime and again returned to the still, which it enters at a temperature of about 80 to 85 deg. C.

The mixture then flows downward over a series of superimposed trays and at the same time meets an ascending current of steam. Suitable baffling devices in each tray insure an intimate and efficient contact between the liquor and the steam. The steam liberates the free ammonia and the lime frees the "fixed" ammonia. The ammonia goes back into the saturators together with the gas from the exhausters. The excess lime and condensed steam leave the still at the bottom as "spent liquor," which goes to the quenching system at the ovens, as it cannot be run into the river.

We will now come back again to the consideration of the gas. After leaving the acid separators it passes through three final coolers which are arranged in series. These are of the same construction as the primary coolers, but water is used instead of weak liquor for cooling. This reduces the temperature of the gas to about 20 deg. C.

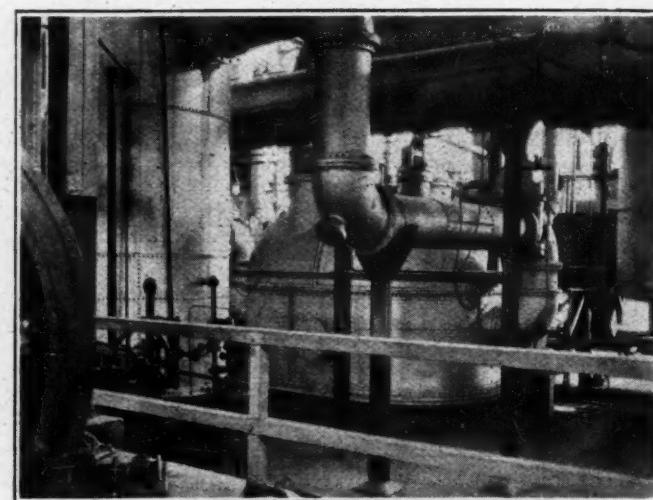


FIG. 11—TAR EXTRACTOR AND SULPHATE SATURATOR
Even after passing through the primary coolers the gas contains tar; consequently in the tar extractor it is passed through a screen and allowed to impinge on a flat surface. As a result the tar is still further removed. The gas then goes to the saturator.

The water, after circulating through the grids, runs into a sump where the small quantity of naphthalene remaining in the gas is deposited and collected, and the water is then pumped under a 200-ft. head to a spray pond located on the side of the hill at a point about 110 ft. above the plant. From this point it returns by gravity to the top of the final coolers. Tests on this spray pond made on favorable days have shown that the water is cooled to a temperature 3 deg. C. below that of the atmosphere.

From the final coolers the gas passes to the scrubbers or absorbers, which are of the same general construction and have a diameter of 16 ft. and a height of 90 ft. Straw oil, which is a light petroleum oil of high boiling point, descends through the scrubbers and meets the gas. The scrubbers are connected in series, two being used at a time and a third being held in reserve.

The gas goes in at the bottom of No. 1 scrubber and rises to the top. It is then taken to the bottom of No. 2 scrubber. The fresh oil, on the other hand, is taken in at the top of the No. 2 scrubber, falls to the bottom, and is raised to the top of No. 1 scrubber. Thus the gas and oil travel in opposite directions, the benzol and its homologues being absorbed by the oil in the process.

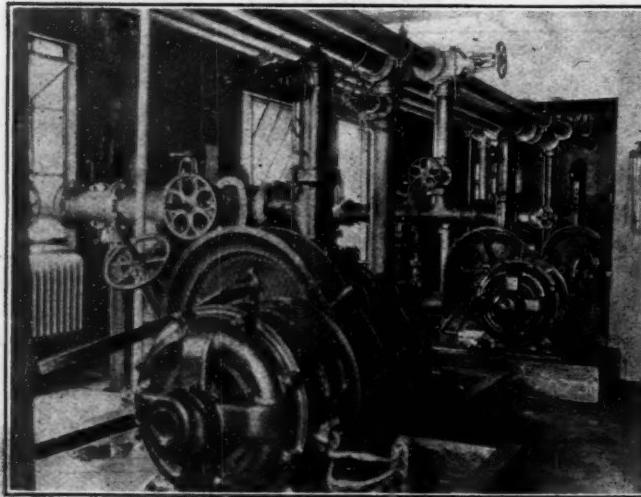


FIG. 10—WASH OIL AND WEAK LIQUOR PUMPS
Centrifugal pumps and their motors, the former being driven through gears. Enough weak liquor has to be passed through the cooling coils and primary coolers to reduce the temperature of the gas in the latter from about 70 deg. to about 30 deg.

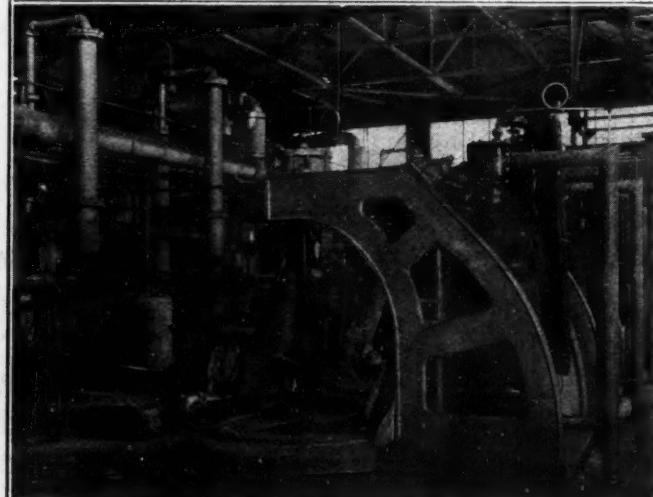


FIG. 12—DRAIN TABLE AND CENTRIFUGAL DRIER
Crystals of ammonium sulphate which fall in the saturator are thrown out by an air ejector onto draining tables. The liquid mixed with the crystals overflows and is returned to the saturator. At regular intervals the salt is paddled into the centrifugal driers

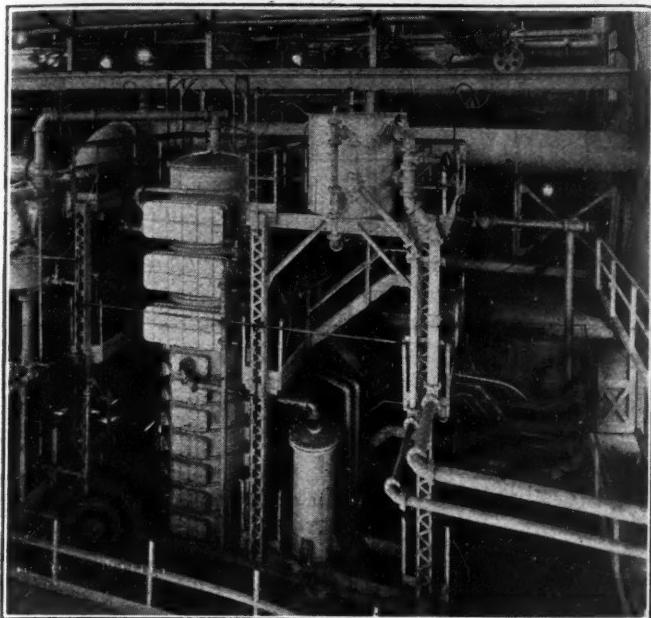


FIG. 13—AMMONIA STILL IN SULPHATE BUILDING

The saturators are fed only with "free ammonia" and sulfuric acid. The weak liquor of the primary coolers is mostly water with fixed ammonia, for conditions are favorable for the escape with the gas of whatever free ammonia may be present. To free the ammonia in the weak liquor the latter is run into the still at the top, passes down through heated coils and is circulated through a lime reservoir, where it is mixed with milk of lime. Returning to the still it falls over a series of superimposed trays, meeting on its way an ascending current of steam. The steam liberates the free ammonia, and the lime frees the fixed ammonia. The ammonia is then taken to the saturator.

When the wash oil comes from the wash-oil collector tank it is pumped into a wash-oil cooler, where it is cooled to about 22 to 24 deg. C. By having the flow of oil and gas come from opposite ends the fresh oil comes in contact with the leanest gas at a time when its absorbing powers are greatest. According to whether the oil is just entering, is part way or all the way through, it

is known as debenzolized, partly benzolized or benzolized oil respectively.

Thus, 90 to 96 per cent of all the benzol vapors are extracted from the gas, and the oil has a saturation of 2½ to 3 per cent of benzol and its homologues. An important consideration is the quality of the wash oil, and periodical tests are made to insure that the desired standard is maintained. A portion of the oil is re-

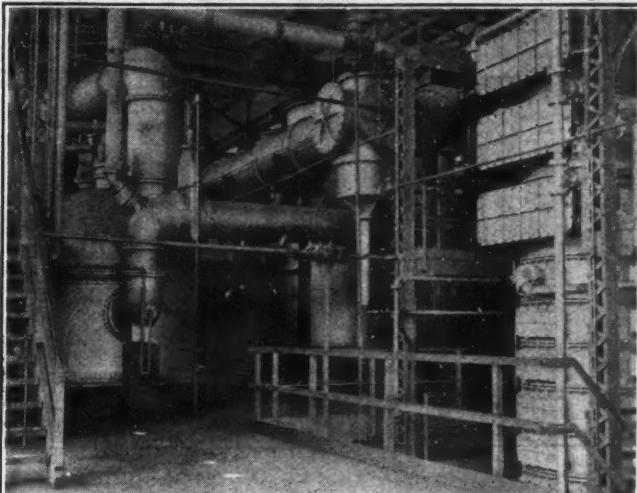


FIG. 14—SATURATOR FLOOR IN SULPHATE BUILDING
This shows the saturator on the left, the tar extractor in the middle and the ammonia still on the right.

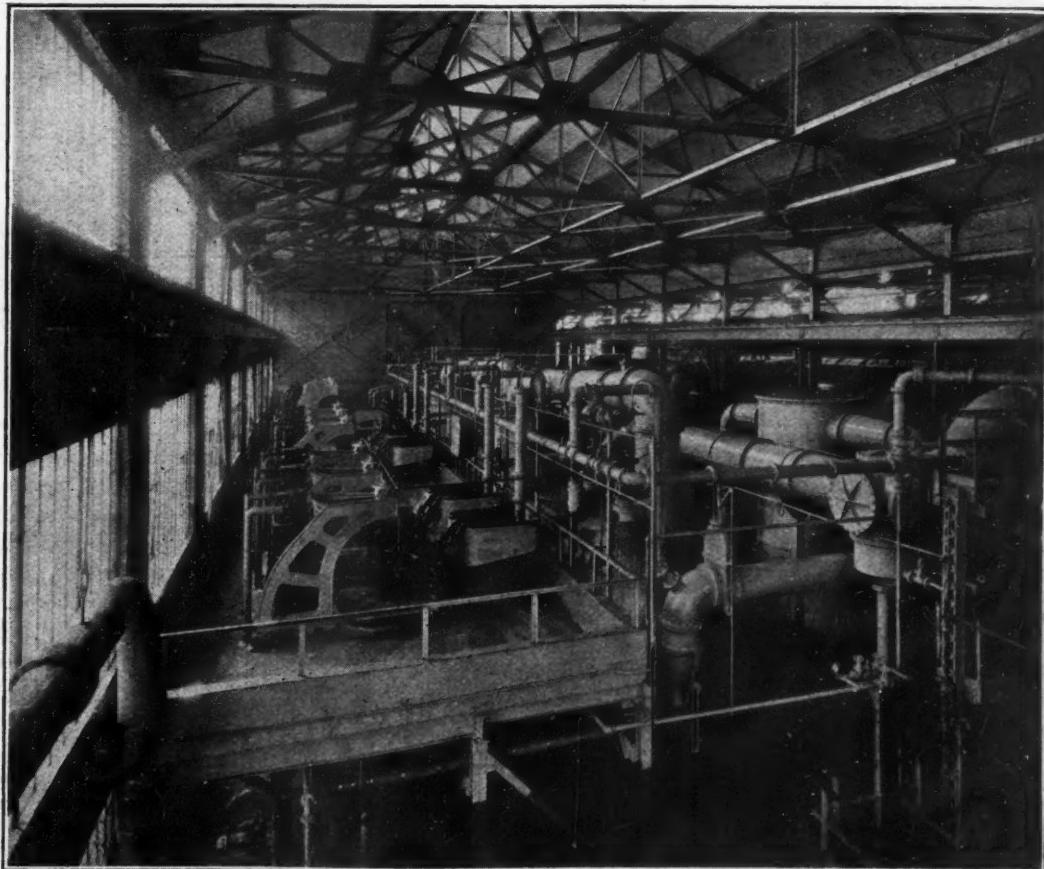
moved from circulation from time to time and replaced by fresh oil, as it has a tendency to thicken, which causes a deterioration in its absorbing powers. There is an average loss of 5 gallons of wash oil per 100 gallons of light oil produced.

The benzolized oil is pumped to the light-oil plant from light-oil absorber No. 1. Here a continuous process of distillation is used with enclosed and open steam

FIG. 15

Sulphate Building

On the right can be seen the tar extractors and separators and on the mezzanine floor the centrifugal driers, which remove the surplus acid from the sulphate. Each saturator has three driers. There are therefore nine driers to match the three saturators. Water is added during the drying process to remove still further the acid which adheres to the sulphate.



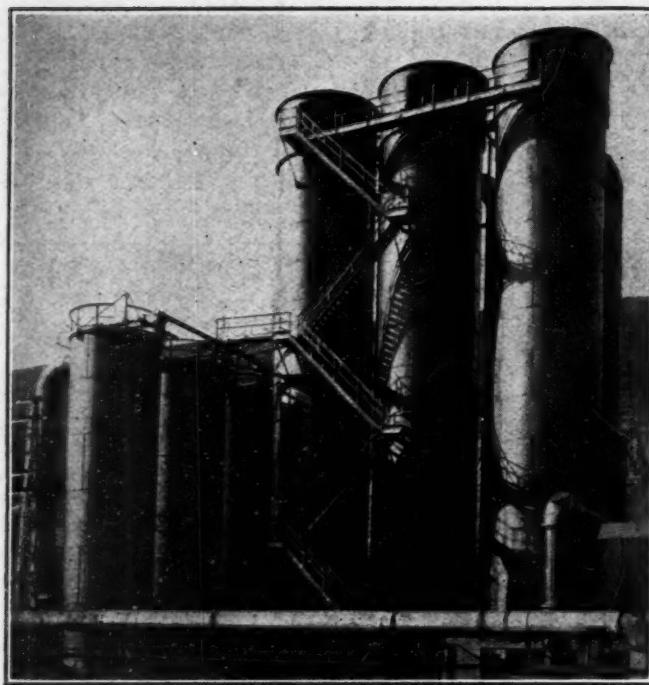


FIG. 16—FINAL COOLERS AND ABSORBERS

The final coolers bring the gas down to 20 deg. C. They are like the primary coolers but they use water instead of weak liquor and this water is cooled in a spray pond. The gas then goes to the scrubbers or absorbers, which it goes through in series, in contradistinction to the practice with coolers. Straw oil is used in place of water, the fresh oil entering where the gas leaves and leaving where the gas enters, so that the unsatisfied oil meets gas that has been almost deprived of its benzol and the almost saturated oil meets gas that has a maximum of benzol.

as the heating agent. The oil first enters an oil-to-oil heat exchanger, where it is raised in temperature about 10 deg. C. Then it passes into a tubular preheater, where it circulates through coils in indirect contact with steam which is forced into the top of the preheater and raises the temperature of the benzolized oil to about 130 deg. C. From the top of the preheater the oil is run off into the light-oil stills.

There are three stripping stills, which have been made of ample capacity to meet all needs. These are 6 ft. in diameter and have a capacity of 20,000 gallons per hour. They are divided into two parts, the lower being the stripping and the upper the fractionating section. Live steam is forced into the bottom of the still and separates the light oil from the straw oil in the form of vapor which rises to the upper section, where water is introduced direct to cool it to 100 deg. C. This removes any heavy oil that might be carried over.

The straw oil flows by gravity to the bottom of the

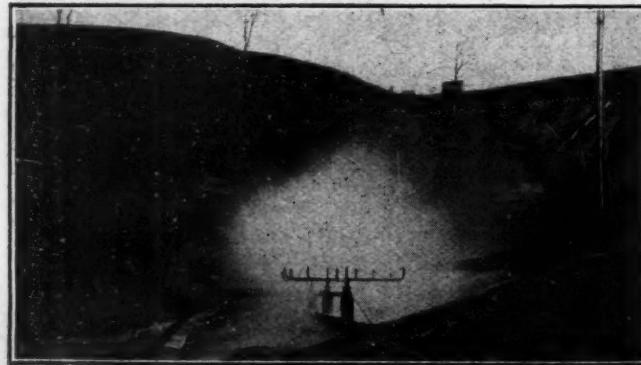


FIG. 17—SPRAY POND FOR FINAL COOLERS

Water, unlike weak liquor, can be cooled in the open air and consequently is more effectually cooled and more effective as a cooler. The pond is 110 ft. above the plant, and the water is pumped up at a 200-ft. head.

still, from which point it is taken to the decanter. Water from the light oil also comes to the decanter. The straw oil is separated from the water at this place and runs back to the wash-oil collector tank, where it is then ready to be used again. The water is pumped to a spray pond for cooling and is then of low enough temperature for pumping back into the top of the light-oil still.

The vaporized light oil passes out of the still into condenser coils, from which the resultant mixture of light oil and water goes to the light-oil separator. In the separator the water is siphoned from the bottom and sent back to the light-oil decanter, and the light oil, which is known as crude light oil at this stage, goes to the light-oil receiving tanks to be measured, and thence to the light-oil storage plant. As no provision is made for further treatment at Rosedale the crude light oil is shipped to the Franklin plant, which will be described later.

The Solvay people claim a high heat efficiency in their light-oil separating system and also emphasize the fact that the separation of light oil and absorbing oil is so complete that the light oil needs no intermediate re-distillation before being worked up into motor fuel or pure benzol, toluol and solvent.

The gas from the scrubbers has had all the byproducts removed and is ready for distribution as fuel gas. All of it goes to the gas holders and from these the gas

FIG. 18—SULPHATE OF AMMONIA IN STORAGE
This salt is readily handled by small portable conveyors, part of one of which can be seen in the right corner of the photograph.

required for the ovens is drawn, the excess gas being pumped to the steel mills by "boosters." About 30 to 35 per cent of the gas is used for the ovens. The remainder is pumped to the mills with the aid of two 150-cu.ft. exhausters, each driven by a 425-hp. twin engine. The surplus gas, estimated at 25 million cubic feet per day, will replace in the mills approximately 500 tons of coal, or 100,000 gallons of fuel oil, or 13,000,000 cu.ft. of natural gas, or 100,000,000 cu.ft. of producer gas.

Some of the auxiliary equipment at Rosedale is of interest. The boiler house contains three 768-hp. water-tube boilers, each of which is equipped with a chain-grate stoker for burning coke breeze. The boiler plant is provided with a track hopper, elevator, crusher, belt distributor and fuel bins for handling either breeze or coal. Ashes are removed by a traveling bucket and skip hoist.

Two air compressors, each direct-connected to a 225-

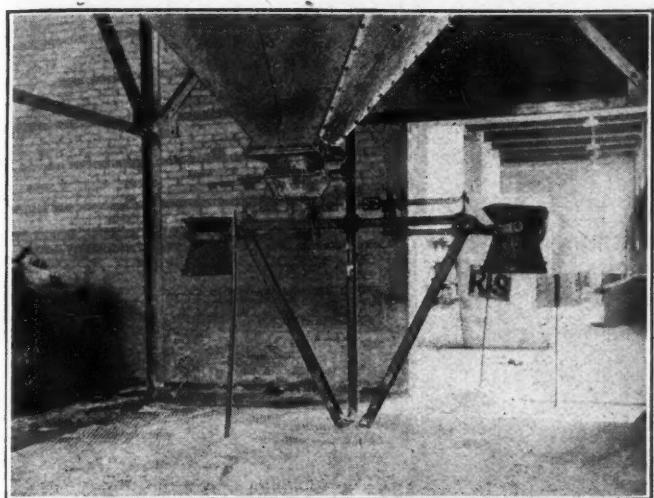


FIG. 19—BAGGING AND WEIGHING SULPHATE
A revolving frame with two containers and two steel yards makes it easy to load the containers with sulphate and weigh the contents, dropping the necessary quantity into bags, ready for market.

Indo-China Has Many Stripings In Coal 100 Ft. Thick

Excellent Anthracite and Low-Volatile Bituminous in Lower Beds and Lignite in Upper—Add Japanese Coal for Coke

THE production of the coal mines of Indo-China has been steadily growing since 1906, when the production was 2,297 net tons. In 1920 it was 770,000 tons and in 1921 it had reached 1,013,000 tons, showing a remarkable contrast with the mines producing non-combustible minerals. The production of these commenced to decrease in 1916, when the output was 55,770 tons; in 1921 it had fallen to 13,178 tons. The demand for coal, says *L'Indochine Minière* a publication of *La Vie Technique Industrielle, Agricole et*

hp. motor and having a combined capacity of 2,000 cu.ft. of free air per minute, take care of the various needs of the plant.

The main source of power throughout the plant is electrical, more than three hundred motors of various kinds being in operation. The current is generated in the steel company's power house and brought to the Rosedale transformer station in which there are (1) two 500-kw. 250-volt direct-current motor-generator sets and one 500-kw. 275-volt synchronous converter for supplying the direct current required, (2) three 1,000-kva. transformers for taking care of the alternating-current requirements.

The method of unloading and storing acid is of interest. The acid is blown from the tank car with the aid of compressed air into a tank of the same capacity. From this tank it passes into a small high-pressure tank of about 800-gallons capacity from which it is forced up into the main storage tank.

Every attention has been paid to making the plant as safe and satisfactory to work in as possible.

Coloniale, to which we are indebted for the information which follows, is steady and rapidly increasing.

Of the five divisions (*pays*) of the Indo-Chinese Union, Tonkin has been the most completely explored and appears actually to be the richest in mines of all sorts. The workmen are mostly Anamese from the delta plains and Chinese. The mountain peoples supply coolies, but they are little inclined to work steadily. They are above all useful to prospectors when making their examinations of the lands to be developed. The wages paid are roughly 50c. a day to Chinese, 35c. a day for Anamese and 27c. a day to native women.

The principal coal basin, which is of the Rhaetian (or Upper Trias) sub-era, a part of the secondary or Mesozoic period, was first mined in 1884. It contains low-volatile, almost anthracitic, coal (*charbon maigre*) and lies in the arc of a circle 112 miles long, extending from Moncay in the east to the Seven Pagodas in the

Monplanet Stripping

Note the various tramming levels and the inclined roadways from level to level up which coolies can travel, also the long inclines running under the various levels. Do not fail to observe that in the rear is another stripping of like character. Judging by the relation of the pit to the sloping surface of the ground the work is only just barely commenced. The Hatou and Campha stripings are equally impressive. Monplanet is one of the collieries of Hongay.

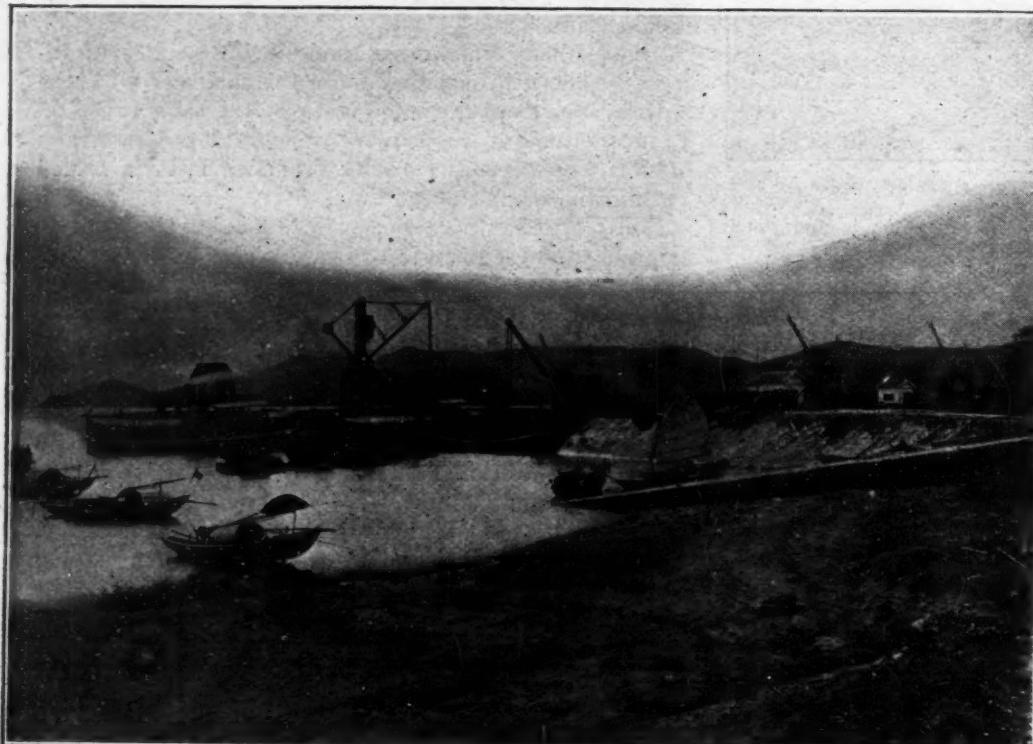


west. The usual proximate analysis will run: Volatile matter, 8 to 12 per cent; ash, 2½ to 7 per cent; fixed carbon, 87 to 88 per cent and sulphur, less than 1 per cent. The calorific power of the fuel will run from 12,600 to 15,120 B.t.u.

It is an excellent fuel that burns without smoke and produces no clinker. With the aid of forced draft it can be used without admixture for boiler furnaces even as mine-run or in a case of necessity as nut coal. Mixed with a high-volatile coal it becomes a good steaming fuel which can be burned by locomotives and sea-going

boats of 110 tons burden, being brought down the streams from the principal mines. The freightage costs 73c. per net ton. More than half the coal is exported, the points of shipment being Hongkong, Japan, China and the Far East.

The largest producer is the *Société Française des Charbonnages du Tonkin*, which mined at Hongay in 1921 792,000 net tons. These mines were worked by the Chinese in 1865. The beds discovered appear to group themselves in two series, those of Hatou and of Nagotna. The first consists of four beds, one, the Big



On Left

**Port of Hongay
Collieries**

Where coal is received and loaded. This port opens into the bay of Along or Ha-long.



On Right

Stock of Briquets

The walls on the right are built of briquetted coal. On the left is a village for natives. This is part of the property of the Hongay Collieries.

vessels. Before the discovery in Tonkin of coal having a larger quantity of volatile matter, Japanese coal was mixed with the anthracite for steam purposes, but today the large navigation companies are beginning to stock their bunkers at Haiphong with a mixture of 60 per cent of the low-volatile coal of Hongay and 40 per cent of the higher volatile coal of other parts of Tonkin.

The mines in that part of the basin which is adjacent to the bay of Along are principally stripings and are close to natural ports accessible to ships of 4,400 to 6,600 tons burden—Hongay, Port Courbet and Port Wallut. The output of the basin in the region of the Dong-Trieu can readily be brought to Haiphong by

Bed, 164 to 197 ft. in total thickness, of which about 98 ft. is coal. The other beds have a total commercial thickness of 49 ft. The second series has ten beds 3 ft. 3 in. to 19 ft. 8 in. thick.

At Hatou the Big Bed is worked in three stripings, and the coal is transported by a railroad of 3 ft. 3 in. gauge. The Big Bed at Campha likewise is stripped and the coal from these pits is transported to Hongay by lighters or junks of 66 to 110 tons weight. The conditions are exceptionally favorable, for this operation is close to the sea. The thickness of the bed is about 492 ft., of which 262 ft. is coal.

At Hongay the coal arriving from different operations

is screened into the following sizes: 0x0.4 in.; 0.4x1.07 in.; 1.07x1.95 in., and larger. The size 0.4x1.07 in. is washed. At the side of the washery is placed a briquet factory which has four presses and has a capacity of 143,000 to 165,000 tons per year. Seventy per cent of Hongay coal and 30 per cent of high-volatile Japanese coal is mixed in the manufacture of these briquets. The briquets are of two kinds—ordinary briquets and those for war vessels.

	Ordinary Briquets Per Cent	Briquets for War Vessels Per Cent
Volatile matter (less moisture).....	17.5 to 18	18 to 18.25
Fixed carbon.....	76 to 77	78 to 81
Sulphur.....	0.90 to 0.95	0.70 to 0.75
Ash.....	7 to 8	5 to 6
Calorific power (B.t.u.).....	13,500 to 13,680	14,130 to 14,580

The factory also has a boulet press which can manufacture 22 tons per shift. A battery of nine coke ovens also is provided. It can produce 27½ to 33 tons of coke per day. It actually produces 1,100 tons a year. The coking mixture is 30 per cent of Hongay coal and 60 per cent (?) of Japanese high-volatile coal. The *Société des Charbonnages du Tonkin* employs 800 Chinese and 7,000 Anamites, but it is estimated that the Hongay mines support a population of about 40,000 natives, including the families of workmen and traders. [Probably this 7,800 men includes the lightermen. It is interesting to notice that these men produce in a year

792,000 tons yearly, or 102 tons per man per year, which, under the favorable conditions is a small quantity, even for Oriental labor.]

Other mines are those of Dong-Trieu. Here are ten beds, of which four are worked. The coal has a usable thickness of 49 ft. to 65 ft. and is of hard anthracite, containing 3 per cent of volatile matter. At Phan-Me is a coal averaging 22 per cent volatile matter, 18 per cent ash and 1 to 1½ per cent of sulphur. It is an excellent combustible, mixing well with the dry coal to make a light and strong coke which has been proved suitable for metallurgical uses. In the basin of Phu-Nho-Quan et Chine is a coal consisting of 20 per cent volatile matter, 7.5 per cent ash and 4.2 per cent sulphur.

Not only is there Upper Trias coal but some that is of Tertiary age. This is lignite. That from the Tuyen-Quang mine has 35 to 40 per cent of volatile matter, 12 per cent of ash and 1.5 to 2 per cent sulphur. At Dong-Giao this Tertiary coal is 29½ ft. thick and at Tuyen-Quang only 8½ ft. thick.

With zinc, tin, tungsten, copper, iron, gold in quartz and placer workings, mercury, phosphate of lime, graphite and sapphires in Indo-China to furnish a market what more could a coal man wish, especially as at present an operator apparently is looked upon as a benefactor and not as someone to be tolerated, unduly taxed and closely regulated.

Disastrous Inflammation of Coal Dust In Excavating a Mine Dump

BY C. A. HERBERT

Mining engineer, U. S. Bureau of Mines

WITHIN the past three years two very serious accidents, under almost identical circumstances, have occurred on the surface at two different coal mines in southeastern Iowa, due in each case to the sudden ignition of a cloud of fine coal dust. The first accident resulted in the burning of six men, three of them fatally; the second burned eleven, three men dying as a result of their burns.

The mines in the southeastern part of Iowa, where these two disasters occurred, are operating in a coal bed the thickness of which averages about 3 ft. They are worked on a longwall advancing system similar to that of northern Illinois.

The miners in this section are paid on a screened-coal basis; in other words, they receive no pay for the fine coal. As a result they use forks in loading the coal into the mine cars, and naturally much coal is left along the roadways. Subsequently this fine coal, together with the roof rock that is taken down to give sufficient height on the roadways, is loaded into cars and dumped in piles on the surface. This roof rock is a black, oily shale, and the combination of fine coal and oil shale gives ample combustible. Consequently the dump pile when it catches fire burns the rock thoroughly as it is dumped. These rock piles, or dirt piles, as they are called, take fire spontaneously and continue to burn as long as fresh material is dumped on them.

This rock, after having burned itself out, makes an excellent material for road building and also for railway track ballast. Because of this latter fact the railroads serving these mines were in each instance loading out the burned material from the side of the rock pile with a steam shovel. Having cleaned up all the loose material along the side of the pile next to the track, leaving a

nearly perpendicular face, shots were placed in this straight face to bring down additional material for the shovel. In each case a slide took place following the dynamite shots. These slides brought down with them a large quantity of the recently dumped and as yet unburned fine coal from the top of the dump; this fine coal being light, naturally separated from the heavier rock material and thus formed a dust cloud.

As some of this fine coal was already burning along the outside of the pile where the air could get to it and all of it was heated nearly to the ignition point, it was in just the right condition to flash into flame as soon as it was thrown into the air. The combined force of the slide and the rapid burning of the fine coal threw this burning dust cloud several hundred feet from the foot of the rock pile and across the railway tracks, burning those who were unfortunate enough to be in its path.

In the latter accident the steam-shovel crew saw the slide take place and shut themselves in the steam-shovel cab to escape what they thought was a dust cloud, and thus escaped injury. The others who escaped were those who were fortunate enough to have run in a direction at right angles to the path of the flame.

One of the lessons learned from the study of dust explosions in coal mines is to keep the dust thoroughly moistened at the point where ignition is likely to occur. This acts in two ways to prevent a serious inflammation of the dust: First, the water tends to compact and bind the dust and prevent dust clouds from forming, and second, if sufficient water is added it will cool the flame of any incipient inflammation sufficiently to extinguish it.

With the above lesson in mind it would be advisable for the railway companies engaged in loading up these old dirt dumps to thoroughly wet down the freshly dumped combustible material at the top of the dump for several days prior to its being disturbed. This could be done best by using fire hose with a pipe 5 or 6 ft. long for a nozzle, which should be forced down into the material on the top of the dump to make sure that the water reaches below the surface of the heated material.

Testing Lightning Arresters and Important Features of Design and Construction

Equipment for Laboratory Testing—Properly Interpreting Laboratory Results—Use of High-Frequency Oscillator for Tests—High-Powered Condenser Discharge—Importance of Wave Form

BY V. E. GOODWIN
General Electric Co., Pittsfield, Mass.

OCCASIONALLY users of lightning arresters think it advisable to make laboratory tests on lightning arresters. In the case of a new type of arrester there may be a laudable desire on the part of a prospective user to determine the characteristics of the arrester, but whatever the motive, few if any companies could economically afford to maintain or have the equipment and technique to make the tests, or the knowledge to properly interpret the results. Years of experience with arresters in service and in the laboratory are necessary to understand and interpret the relationship between results in service and results in the laboratory.

The testing of a well-established arrester, like the compression chamber or oxide film arrester, is simply a waste of time, not only for the reasons just given but also because service tests, which if properly made are better than laboratory tests, have already demonstrated the effectiveness of the arrester.

In order that the problem of testing arresters may be better understood, and hence a waste of time and money avoided, it may be interesting to outline several of the methods employed in the laboratory, and the difficulties encountered.

VARIETY OF PARTS TESTED BY ELECTRICITY

Routine factory testing consists in testing insulators, bushings and other insulations to make sure that they have the necessary dielectric and flashover characteristics, and that they meet the specifications of the American Institute's standardization rules. All chemicals and compounds are given special electrical and chemical tests. Completed parts, like the oxide film cell, and, where necessary, arresters, like the compression chamber arrester, are electrically tested to determine whether the device has been properly assembled. Such tests simply insure that the product is in accordance with the ideas of the designers.

In research and development work, models of the proposed designs are tested according to certain standards established by experience. Fundamentally, the arrester must protect apparatus against lightning disturbances and must do so without being itself damaged or causing an interruption to service. It is not always appreciated that it is extremely easy to make a device that will protect, that it is extremely easy to make one that will be safe against self-destruction and that will not interrupt service, but that it is extremely difficult to make one that will combine both characteristics. More in detail, the arrester is tested to determine the following characteristics:

(1) *Sensitiveness*.—This determines at what value of the abnormal voltage the discharge begins. It is a function of the gap setting, and of the shape and material of the gap electrodes. The last two determine the "speed"

of the gap—that is, the dielectric spark lag under impulses of steep wave front.

(2) *Discharge Rate*.—Probably the most important characteristic. It is largely a function of the internal impedance of the arrester. It is a measure of the arrester's ability to discharge quickly large quantities of electricity.

(3) *Reseal*.—This is a measure of the recovery of the arrester after the passage of the lightning discharge. The line current that follows the lightning current might damage the arrester, and hence it must be interrupted in two or three cycles or less. It is a function of the principle on which the design of the arrester is based, as oxide film cells, aluminum cell, multigap, magnetic blowout, solenoid, or other mechanical means. In this character is also included the ability of the arrester to withstand quickly recurring disturbances. It also determines whether the arrester will function without causing such a large current to flow as to trip circuit breakers or interrupt service.

(4) *Life and Endurance*.—Tests are made to show whether the arresters will have a life comparable with that of other electrical apparatus.

In making laboratory tests it is kept in mind that a lightning arrester is a device for handling transients of short duration. These are superimposed on the normal voltage of the system and their duration is measured in micro-seconds (millionth of a second). When making laboratory tests, and also in service, the dynamic (generator or line) voltage never should exceed the normal rating of the arrester, as otherwise the cells or similar parts may be instantly damaged. Sometimes in making tests, double dynamic or some intermediate voltage is applied while a fuse is blown, but this is only done to get an idea of the current rate at which a transient or similar voltage would be discharged as the oscillograph is not fast enough to record transient currents of the speed of lightning. This, however, is not an operating condition and the tester is not alarmed even if the parts of the arrester are impaired by the test.

Another point kept in mind in making tests of this nature is that transient voltages occur across any arrester during the time it is discharging. These are due to several conditions which will be discussed later, but the point is the fact that they may or may not be detrimental. The function of the arrester is to protect the insulation of that part of the system adjacent to the arrester. This insulation is tested at 60 cycles for a period varying from 30 seconds to 5 minutes. This test is applied between terminals or between line and ground. Under transient voltages the conditions are quite different. This same insulation may safely stand four or even ten times as much voltage for this shorter time.

Again, under transient conditions the voltage distribution may be entirely different. Hence, an experi-

menter on lightning arresters should be thoroughly versed in the effect of these transients on the insulation of the apparatus and devices on electric systems. When making tests he should apply transients of various wave fronts to these arresters and at the same time should study their effect on the other apparatus to be used on the system. This is a difficult research problem, and for this reason the General Electric Co. considers it necessary to confirm these tests with two or more years of actual operating experience before putting a new lightning arrester on the general market.

Coming back to the question of transient voltage tests, with an arrester having a series gap there are two transient voltages in which we are interested. Assuming the extreme case of a rectangular voltage wave which has a vertical wave front, we would have the full voltage of the wave impressed upon both arrester and apparatus until the gap sparks over. Where sphere gaps are used this time interval is extremely short. After the gap has sparked the voltage drops to a value depending upon the quantity of electricity in this wave and the internal impedance of the arrester.

INTERNAL RESISTANCE VARIES WITH VOLTAGE

The internal resistance of an arrester of the valve type, like the aluminum or oxide film, is a variable factor, depending upon the applied voltage. It is high for voltages below the critical value and rapidly decreases for higher voltages. Thus for the oxide film arrester it is 10,000 to 40,000 ohms for voltages below the critical value and decreases rapidly to only a fraction of an ohm as the voltage is further increased. The capacitance of the cells also affects the impedance of the cells, and likewise the voltage across the arrester. High capacitance, as a general rule, is a desirable feature, but a gap in series with such cells counteracts or nullifies this quality to a great extent.

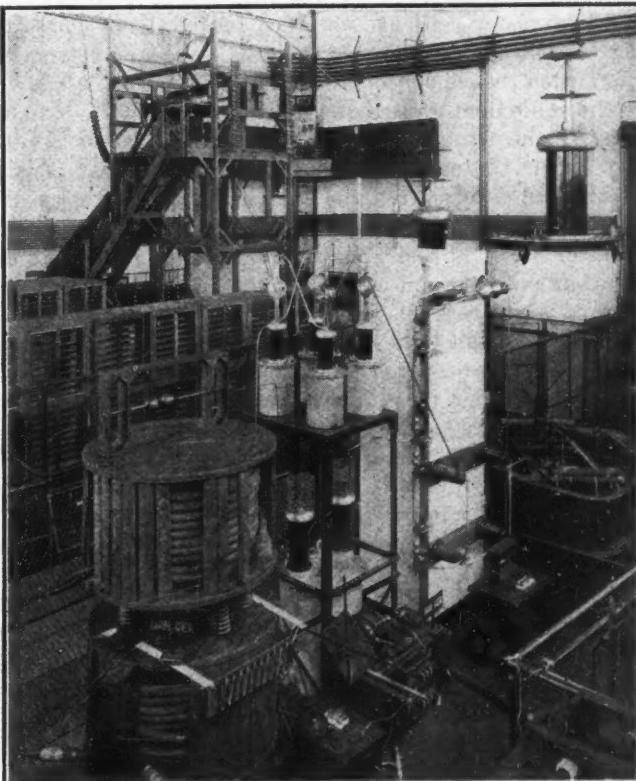
Hence, when an arrester discharges, we have first a momentarily high voltage impression until the gaps spark. This is followed by a rapidly decreasing voltage, which, as described, above, depends upon the quantity of electricity in the charge on the line and the internal impedance of the arrester. We find that this latter voltage and the rate at which it decreases is the important factor in the gap types of arresters—speaking of disturbances that may rise to the maximum value and decay to harmlessness in twenty-five micro-seconds or less. The time involved in this decay of voltage should be short so as not to stress the insulation of the system which is in parallel with the arrester. This is where the term "discharge rate" of an arrester comes in. It is a measure of the admittance of the arrester circuit at any selected super-voltage. As a general rule, it is expressed in terms of the instantaneous current which flows through the cells when double normal voltage is applied, as this is the accepted minimum test voltage for electrical apparatus.

The discharge rate of an oxide film or aluminum arrester is 600 amp. or over, and of a 2,500-volt compression chamber about 100 amp. Discharge rates of arresters are taken in various ways. The most common is to apply double voltage sixty cycle for a moment and take an oscillographic record of the current flow. This test is not a duplication of any operating condition, and, as mentioned above, is only made in order to get an accurate current record. Another and more comparable method is to pass transients through the arrester and measure the voltage drop across the arrester by means

of measuring gaps. These transient discharges are obtained by charging a condenser by high voltage, direct current, and discharging it through a circuit containing the cells and variable amounts of resistance and inductance, thus obtaining a range of wave fronts and wave characteristics.

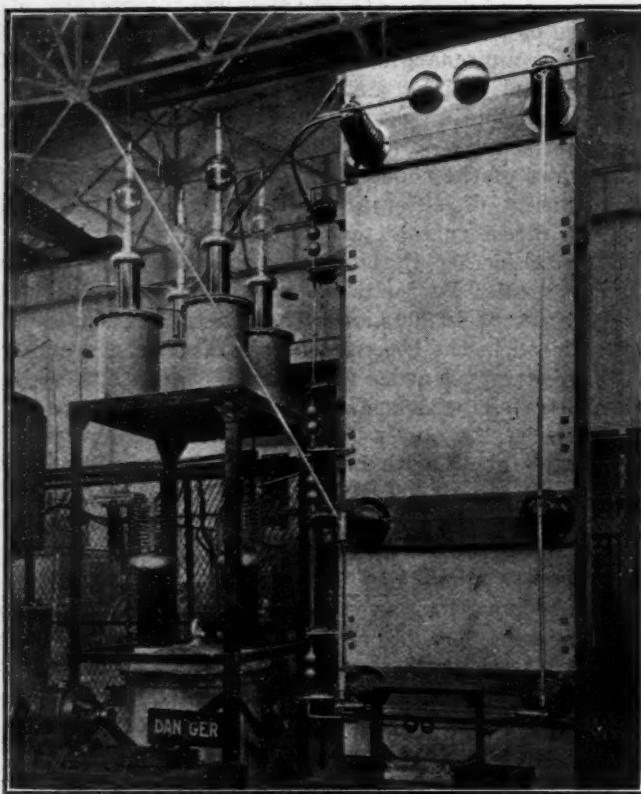
The size of the condenser can be varied to represent the capacity of different electric circuits. The high voltage, direct current, can be obtained from either a static machine or suitable kenetrons. We generally use from 100 to 120 kv. for these tests. The current may be of the order of 10,000 amp. The kenetron testing outfit is described in the *General Electric Review*, November, 1921, by Messrs. Hayden and Lougee. Tests of this kind should be made with condensers of fairly large capacity, as otherwise the power involved in the transient is not comparable at all with heavier lightning conditions on an average circuit. Tests made with small condensers or at lower voltage often give misleading data on the protectability of an arrester.

A common mistake in testing arresters, and particularly in comparing one type with another, is to use a high-frequency oscillator. This device has a place in a lightning arrester testing laboratory, but some experimenters, evidently not thoroughly understanding the phenomena involved, have used the oscillator to demonstrate conditions that could not possibly be attained with such a device. It is easy to obtain any desired voltage with the high-frequency oscillator, but it is not possible to obtain the desired current. Ordinarily, the current will be in the neighborhood of half an ampere and is in the form of recurrent trains of oscillations. With such a low-powered testing device it is not possible to determine the relative speed of gaps or the discharge rates of arresters. With such a test circuit it is easy for an inexperienced



SECTION OF HIGH-VOLTAGE TESTING LABORATORY

Such equipment as this is necessary for the testing of electrical equipment used on high-voltage lines, also to test apparatus for lightning protection. An important attribute of the apparatus used in these tests is that it makes it possible to obtain, discharge and dissipate large amounts of current and electrical energy.



LIGHTNING-ARRESTER TESTING APPARATUS

Studies of the effects produced by transient wave surges of various forms are necessary in making arrester tests. By the use of resistances and impedance the wave forms may be varied over a wide range.

tester to conclude that needle gaps are faster than spheres or to make other equally unscientific deductions.

Referring again to the tests with a high-powered condenser discharge, the discharge rate and protective value of the arrester cells are obtained indirectly by measuring the voltage drop across the cells by means of sphere gaps when the condenser discharges. This test is known as the equivalent-sphere gap or E.S.G. test. The rate of decay of the voltage is the really important factor in this test and is the most difficult factor to determine, as up to present date no reliable instruments have been devised to record accurately the wave form of these short transients. It is desirable to have this rate of decay as rapid as possible and at the same time avoid an oscillation of any great magnitude. The sphere gap is extremely fast and indicates the highest values of equivalent spark gap. Slower gaps also are substituted for the spheres in order to study this rate of decay of voltage during the discharge. Needle gaps are slower than spheres and gaps under oil likewise are slower. Again this decay of voltage is studied by substituting various kinds of insulations for the measuring gaps.

A common error in making E. S. G. tests is to neglect the current capacity of the testing generator. Such tests made with a high-frequency oscillator illustrate this point. The current is so small with respect to what the arrester is called upon to discharge in a lightning disturbance, and the effect of capacity may be so great as to make the results worthless. A measure of the protection afforded is the voltage across the arrester (and hence across the apparatus) when the arrester is discharging, and the voltage can be measured only by putting through the arrester an amount of current that would be comparable with the current during a lightning discharge.

The reseal properties of an arrester are studied by applying normal 60-cycle voltage and superimposing

impulses of different intensities on the circuit. The impulse is timed to occur at a predetermined point in the 60-cycle wave, and the dynamic current flow is recorded by the oscillograph, which also shows the reseal characteristics. The time of a reseal in a high-grade arrester varies from a micro-second to about four-hundredths of a second. In lower grade arresters the reseal is longer, requiring in some cases several seconds.

Life and endurance tests are made in several ways, depending on the type of arrester. In general a 3,000-volt section of an arrester is subjected to condenser discharges from a static machine at a rate of one discharge in fifteen seconds. The equivalent sphere gap of the arrester section is taken from time to time.

Another endurance test is to apply normal sixty cycles to the arrester and superimpose different impulses at definite intervals. These impulses are timed, by means of a synchronous switch, to occur at a specified point in the 60-cycle wave to give the most severe operating conditions and to avoid the otherwise hit-and-miss tests. This point varies for different arresters but lies between 30 deg. and 90 deg. after the voltage passes through zero. Secondary life and endurance tests also are made with surges or recurrent oscillations, in order to study the operation and characteristics of each type of arrester. These tests are not true representations of any line conditions, but are made in the further study of the arrester.

The testing of lightning arresters at first sight seems a simple problem, but the lack of supersensitive instruments for accurately recording wave forms of single impulses makes the problem a very difficult one, and roundabout methods must be employed.

Will Erect Exhibition Mine in England

AT THE British Empire Exhibition, to be held at Wembley, near London, the Mining Association of Great Britain will erect a colliery that will enable the public to realize what a mine is like above and below ground. The director of the mining exhibit is H. M. Crankshaw, who while he was in this country and general manager of the Cranberry Coal Co., a subsidiary of the Lehigh Coal & Navigation Co., was a frequent contributor to *Coal Age* and also to the proceedings of the American Institute of Mining and Metallurgical Engineers.

He writes that he will have a quarter of a mile of underground workings which will show longwall and pillar-and-stall methods of operation with all the general mine equipment such as pumps, haulage, coal cutters and stables. It is said that the exhibit, including the machinery shown, will represent about \$500,000. Arrangements are being made to lower a thousand people per hour into the shaft, which will be 15 ft. in diameter and 40 ft. deep. About twenty persons will be lowered at a time.

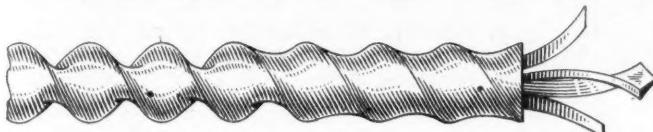
The headframe and tipple will be of steel 70 ft. high. It will have all the regular equipment, scales, car hoist, rotary dumps, screens and a washery. A lamp room and a fan also will be installed.

The exhibition will be held in May of next year and has been planned in collaboration with representatives of the Institution of Mining Engineers, the Miners' Federation of Great Britain and the Mines Department. Correspondence should be addressed to H. M. Crankshaw, Director, Mining Exhibit, General Buildings, Aldwych, London, W. C. 2.

New Equipment

Small Coal Auger Bit with Two Reamers

WITHOUT a single bolt to come loose in the hole and cause trouble, the Bachelder & Conner Manufacturing Co., of Decatur, Ill., has devised a coal auger with a central twisted straight-ahead bit and two side reamers, all three about 8 in. long. They slide in a



COAL BIT THAT MAKES SMALL HOLE AND REAMS IT

The small bit leads the way, one reamer then enlarges the hole and the other brings it to standard. The manufacturers are meeting a species of general demand, recently arisen, for small detachable bits that can be carried without adding too noticeably to the miners' burden.

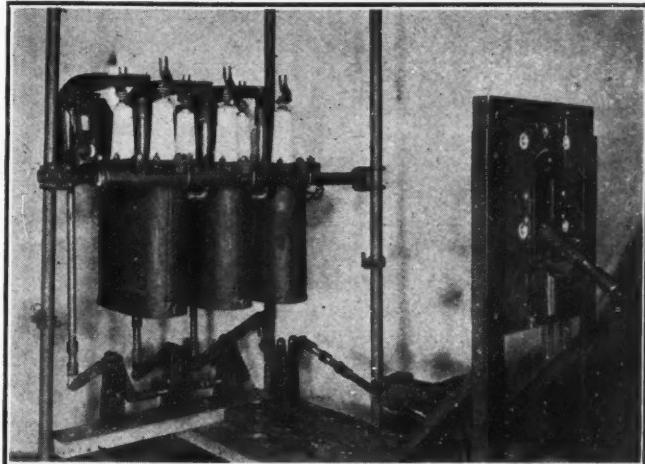
slot in the bit head. The center bit is about 1 in. in the lead of the inner reamer, and the point of this in turn is about $\frac{1}{4}$ in. ahead of the point of the outer reamer. The center bit cuts a small hole ahead, the inner reamer enlarges it to about $1\frac{1}{2}$ in. and then the outer reamer increases its diameter to the size the miner desires up to a 4-in. hole. It is claimed that the auger drills easily and that as the actual cutting bits are small the miner can carry them to the shop in his pocket when he wants them sharpened.

New Oil Circuit Breaker of Unit Type

A NEW oil circuit breaker, the type F-33, in capacities of 400, 600 and 800 amp. at 15,000 volts, has been placed on the market by the Westinghouse Electric & Manufacturing Co. This breaker has an interrupting capacity of 1,900 amperes at its rated voltage and is applicable wherever a breaker of that capacity is needed. It is made in the remote-control form only to conform to the recommendations of the Electric Power Club oil circuit-breaker standard practice rules limiting the service of panel mounting breakers to voltages not exceeding 2,500. A separate pole per frame construction makes it particularly applicable wherever it is desired to have the phases isolated.

The type F-33 breakers are supplied for either manual or electrical automatic or non-automatic operation and in single-, two-, three- or four-pole units. Each pole unit is entirely separate with its own frame, mechanism and tank. The heavy cast-iron framework is arranged for either wall or pipe mounting. The mechanism of the breaker is provided with a toggle which permits the breaker to be adapted readily for upward, downward, or horizontal pull without the use of any additional material. A highly efficient form of wedge and finger contact is used with an auxiliary arcing contact on the moving element. The stationary contact is so shaped and located that different portions of the same contact surface act as the main current-carrying contact and as the arcing contact, thus preventing arcing on the main contact surface. The sheet-steel tanks have all seams lap-welded and are lined with micarta.

The electric operating mechanism has a solenoid with a 3-in. diameter core and consists of a cast-iron frame



TYPE F-33 MANUALLY OPERATED CIRCUIT BREAKER
Frequently four-pole units should be purchased and installed for 3-wire systems. This arrangement makes readily available the spare unit in the event of trouble; a feature of importance where continuity of service is essential.

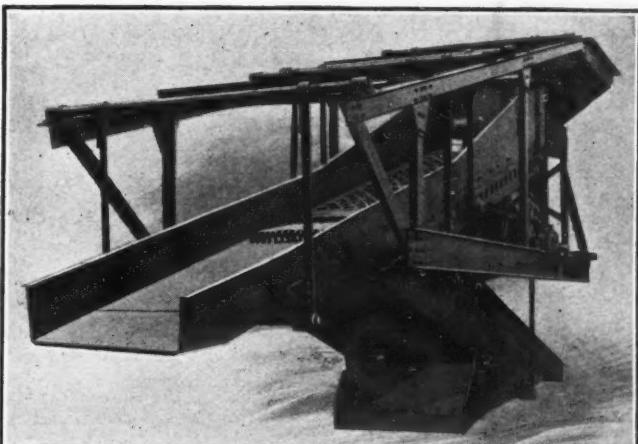
with spaces for closing and trip coils. The moving core of the closing solenoid pulls the main lever down to the closed position, where it is latched, and the trip coil disengages the latch. The mechanism is provided with springs to make the breaker open more rapidly. A two-pole double-throw auxiliary switch is used for cutting out trip-coil currents and controlling indicating lamps.

Simple Standardized Coal Screen for Use At Thousand-Ton Per Day Plants

LUMP, egg and slack are made in a compact, uncomplicated screen designed and constructed by the Morrow Manufacturing Co., of Wellston, Ohio. It is built on a conservative rating of 125 tons per hour, so that it will serve the purposes of the numerous plants producing 1,000 tons per day or less. It is known as the Morrow Junior.

The feeder hopper in the rear receives the coal, and a reciprocating feeder causes it to flow evenly onto the shaking screen. This screen separates the egg and slack from the lump coal. The latter passes finally over a bar rescreen which takes out all the slack that may remain delivering clean coal to the loading boom or other loading device.

The egg and slack pass through the perforations to a



WHY NOT STANDARDIZE SCREENS AND TIPPLES?
When one would buy an engine for ordinary work one inquires what types are being built on a quantitative basis. Engines, like most other things, are now but rarely custom-made. Screens and tipplers, where not unusually large, might equally well be standardized, except, of course, that the approaches to tipplers must be fitted to the hill.

lower screen, where, after separation, the egg goes to the third track and the slack to the center, or second, track. The lower screen is provided with two slide valves which may be adjusted to mix all or any part of the egg with the slack, which is loaded on the center track.

In two or three minutes the bar screen in the upper section may be adjusted to permit any size of "big lump" to be loaded, leaving the "depleted run-of-mine," which is loaded on the center track. The "depleted run-of-mine" may be deprived of any or all the egg coal, which may be loaded on the regular egg track. Thus big lump, depleted mine-run and egg can be loaded at the same time. If necessary a rack and pinion or a fly valve can be placed in the hopper so that run-of-mine can be bypassed directly to the railroad car without operating any of the machinery.

Standardization makes it possible to construct these screens inexpensively, and it is asserted that being solid units they absorb most of the vibration, shaking the screen rather than the tipple and making the operation less noisy than is customary with shaker screens. Standard tipple plans have been prepared to go with the screen so as to make it easy to prepare for its reception and to install it.

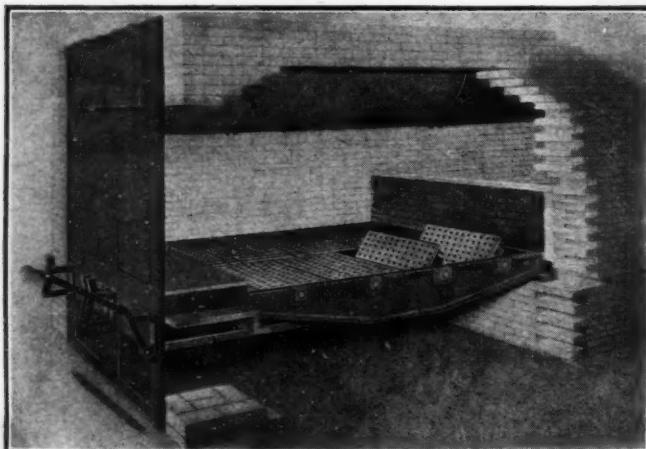
Grate for Burning Small Sizes of Coal

WITH increased interest in the consumption of pulverized coal many operators and consumers will find it advantageous to consider the adoption of a grate suitable for burning fuel of small size.

The Marion forced-draft grate, made by the Marion Machine, Foundry & Supply Co., of Marion, Ind., is designed to burn all kinds of fine or dusty fuel, such as anthracite culm, coke breeze, bituminous slack, lignite coals or sawdust, or any fuel that is so fine that it cannot be burned on the regular form of grate.

The grate-bar construction is that of a cradle into which is cast the steel-bearing trunnions. The perforated top plates are bolted to these cradles. The top plates are made in sections, using two or more plates to each cradle. These plates are bolted to the cradles and are easily replaced when burned out.

The joints between all the grate bars and the side frames are beveled to fit closely enough so that the fuel cannot sift through into the ashpit.



MARION FORCED DRAFT GRATE

The grates are made up in one or more sections in width, as may be required, and of the proper depth to fit the firebox. The grates may be so arranged that on a long set the front and back sections may be dumped separately.

The grate bar tops are perforated with either $\frac{1}{8}$ - $\frac{1}{4}$ -in. holes, spaced $\frac{1}{2}$ in. apart. This gives an even distribution of the air to all parts of the fuel bed. These holes are so small that the air coming up through them prevents any fuel wasting into the ashpit.

The ashpit is closed, and a forced draft is provided by means of a turbine or steam draft blower installed in the furnace wall. This insures the strong draft necessary to force the air up through the dense fuel bed.

Automatic Mine Car Coupler

THIS device is designed with the idea of efficiently filling the need for a safe automatic coupler. Its inventor, A. J. Baldwin of Pikeville, Ky., asserts that it has more than twice as many good points as it has

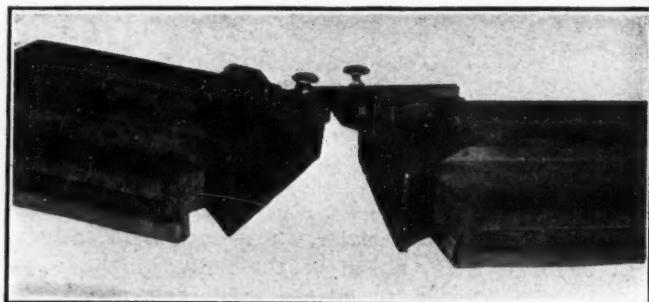


FIG. 1—READY TO COUPLE

The model shows the construction details and how the jaws align before coupling.

parts. Briefly some of the advantages are: It will save time, eliminate wrecks, cannot accidentally uncouple, can be released or uncoupled quickly and easily, is adaptable to any car, is rugged in construction, safe and relatively inexpensive.

This new device is called the Bulldog Automatic Mine-Car Coupler. When the cars are bumped together they couple automatically and require no human effort.

Loss of coal is greatly eliminated by this coupling device because the coupler holds the cars closer together and there is less bumping of one car against another, with the attendant loss of coal from the top of the car.

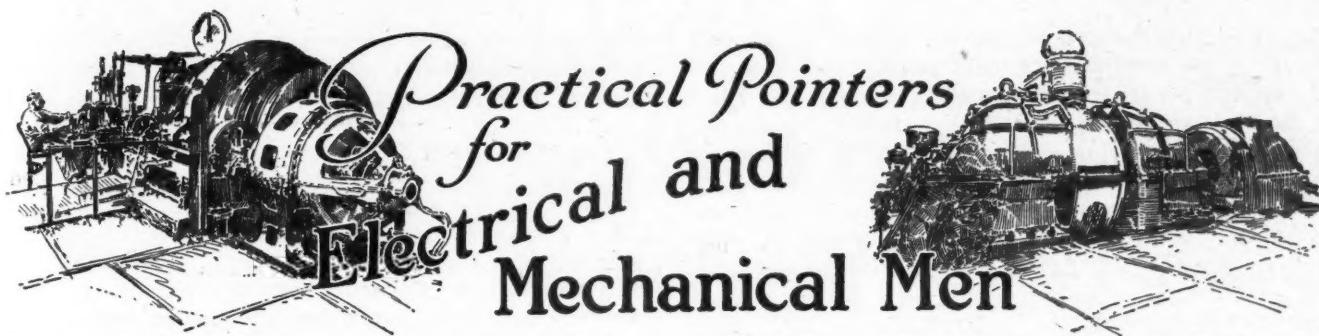
Fig. 1 shows the relative position of the dogs of the



FIG. 2—HOW TO UNCOUPLE

One hand is all that is used in uncoupling and there is no slack space between cars for the workman to be caught and squeezed.

coupler just before they are linked or fastened together. Fig. 2 shows how the coupling may be easily and safely opened with far less danger to the trip runner or dump man than is usual with present-day links and pins.



Practical Pointers for Electrical and Mechanical Men

Testing Polarity of Field Coils

THE object of this test is to determine whether the main and commutating-pole field coils are properly connected. This test should be made whenever field coils are replaced, because coils sometimes are placed over the poles of the frame inverted or reversed, and wrong connections thus made show up in faulty operation of the motor. This test will reveal conditions which might cause an armature to run hot because of an unbalanced magnetic field circuit caused by a reversed main field coil. It also will indicate conditions which might cause poor commutation and flashing in a commutating-pole motor because of a reversed commutating coil.

The following apparatus is required: A polarity detector, such as a small compass; a switch and several sets of grid resistors. A circuit is arranged as shown in Figs. 1 and 2. At least five or six sets of resistors should be put in the circuit at first. If a readable deflection on the polarity indicator is not obtained, part of the grids can be omitted. If one is available, an ammeter in the circuit will indicate whether the current is large enough to be likely to cause damage.

A very satisfactory polarity indicator can be made from a piece of steel banding wire about 3 in. long, with one end bent over about $\frac{1}{4}$ in. to distinguish it. This is suspended at the middle by a short thread. When this is first used it should be held at the pole for at least one minute, when it will become magnetized; then it is ready for use.

The motor can be either on the machine or out on the floor. It can have the armature in or out of the frame, and if it be a split frame, it can be open or closed. With the coils all connected in series, connect the two field leads to the test circuit, as shown in Fig. 1. When the switch is closed, current passes through the field coils, and if they are connected properly, by holding the polarity indicator close to the ends of the coil or to the

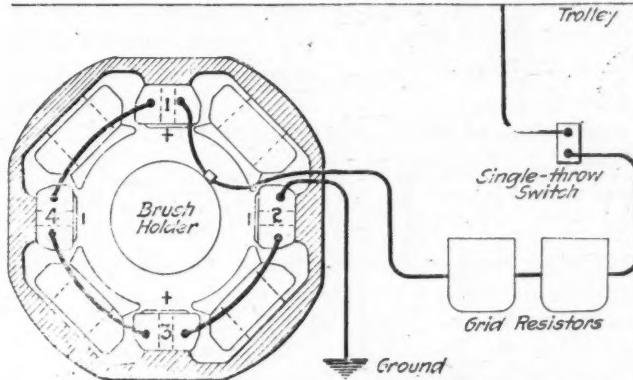


FIG. 2—TESTING COMMUTATING FIELD POLES

Here the commutating fields are connected in series with a resistance and connected between the trolley and ground while the polarity of the coils is tested.

pole stud bolts on the outside of the frame the polarity indicator will reverse at alternate poles; i.e., if No. 1 pole attracts the positive end of the polarity indicator, No. 2 should attract the negative end, No. 3 the positive end and No. 4 the negative end. If these conditions are not obtained the field winding connections should be changed.

If the frame tested has commutating poles, two separate tests should be made, one on the main field coils, as previously described, and the other on the commutating-pole coils, which is made in the same manner, with connections as shown in Fig. 2. In this case only one of the motor leads (the negative armature lead) can be used, as the other lead from the commutating coils goes to one of the brush-holders. Four-pole railway motors used in mine locomotives with only two commutating coils, which are located directly opposite each other; also four-pole motors with three commutating coils, are tested in the same manner. In the case of the two-pole machine the polarity of both coils should be the same; in the three-pole machine the two coils on diametrically opposite poles should be of the same polarity, while the intervening coil should have the opposite polarity.

In making this test:

(1) Hold the pivoted compass in a horizontal position or the suspended polarity indicator by the free end of the suspension thread.

(2) Test for polarity at the same end of all coils—either the commutator or the pinion end, whichever is more convenient.

(3) Never consider results final until they have been checked the second time, as there is a possibility of the needle of the indicator having its polarity reversed.

(4) It is not necessary that a certain pole have a definite polarity of either + or -, but it is essential that the polarity of adjacent poles be different.

In the case of a commutating-pole machine it is im-

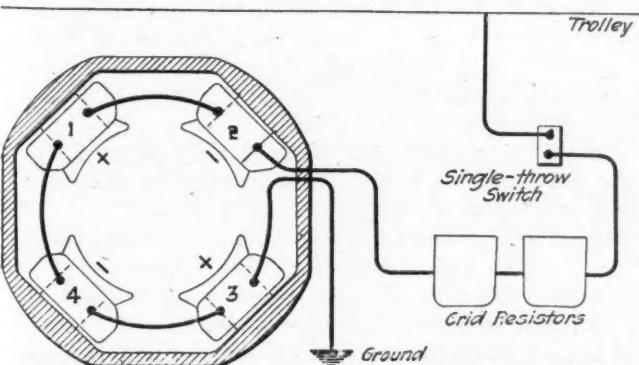


FIG. 1—CONNECTIONS FOR TESTING MAIN FIELD COILS

With the main field coils connected in series with a resistance between the trolley and ground the field polarities should alternate as the circuit is followed around the frame.

portant to have the proper relation of polarity between the main and commutating field poles. To check this connect the negative (-) armature lead of the motor to the positive (+) field lead, the positive (+) armature lead to the trolley side of the test circuit, and the negative (-) field lead to the ground side of the test circuit, and close the switch. If the armature is in the frame and the brushes are making contact on the commutator, current will flow through all the windings; if the armature is not in the frame, then it will be necessary to short-circuit the brush-holders. With these conditions, the polarity of a main pole should be the same as the polarity of the commutating pole next to it in a clockwise direction when facing the commutator end of the motor.

Question on Maximum Demand

WITH reference to an article appearing in *Coal Age*, July 26, page 144, on the subject of maximum demand, which I read with much interest, I found, on looking up some of the catalogs of manufacturers selling demand meters, that there seems to be some confusion on the subject. Referring to the type R.A. demand meter description in the Westinghouse catalog I find the statement: "If the reset wheel is set for one-hour intervals, three offset marks give indications from which the 15- or 30-minute demands during the one-hour interval may be obtained." If this is true, then it would appear that the shorter the time interval the lower would be the maximum demand.

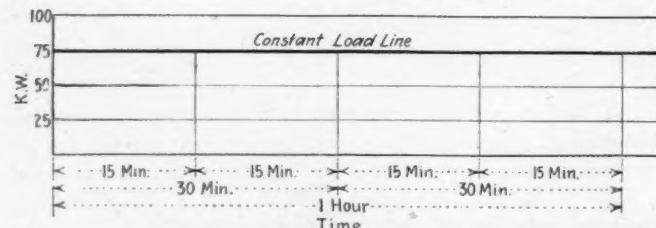
This statement does not agree with the article referred to above and it seems to me that there should be some further explanation.

PENNA. READER.

Let us assume three maximum demand meters operating on the same circuit and measuring the 15-minute, 30-minute and one-hour maximum demand of a constant load. According to our definition the maximum demand is the average demand established over a given time interval. From this we see that the maximum demand on each meter must be the same. This is shown in the figure. The 15-minute demand meter would indicate 75 kw. maximum demand four times in the hour, the 30-minute demand meter would indicate 75 kw. twice in the hour and the one-hour demand meter would indicate 75 kw. once in one hour.

Note that the one-hour demand meter would be only half through registering in one-half hour and would therefore indicate 37.5 kw. Taking this halfway point and multiplying it by 2 gives the correct maximum demand and multiplying the quarter-hour registration on the one-hour demand meter by 4 gives the correct maximum demand. This is true only when the load is constant, which is a rare case.

From the chart referred to it is not correct to assume that the 30-minute offset gives the true maximum



EXPLANATION OF MAXIMUM DEMAND

It is apparent that the average demand for either the 15-minute, 30-minute or one-hour period must be the same and are all equal to 75 kw.

demand. Only when the load is constant is it possible to multiply this point by 2 to obtain the correct one-hour maximum demand.

Safety in Gas Welding and Cutting

ADDITIONAL suggestions for safety in gas welding and cutting were brought out as follows in a paper on the subject prepared by C. F. Worfolk, for the National Safety Council meeting recently held at Detroit. The first section of the paper appeared in the July 19 issue of *Coal Age*.

A properly trained welder will protect the other fellow from the "hot" metal. The green hand does not know enough to do so. He costs the employer a lot of money. Just because the first-aid department handles the burn case it probably is charged against the general cost of doing business and not against the person responsible. Employers know that they will need welders from time to time. There are many places where welders can learn the trade properly. It would seem good policy for the employers to encourage their men to take up trades of this nature when such excellent facilities are available as there are in most big cities. Schools like the technical public schools, the Y. M. C. A. schools and the institution that I represent, the Michigan State Automobile School, offer thorough courses under expert instructors.

Next to burns come injuries to the eyes. Most of them are absolutely preventable. Employers should compel their torch men and attendants to wear suitable goggles. It sounds easy and it is easy if the employer insists upon it. The torch flame looks harmless, but from it, as you know, constantly emanate rays which are destructive to the delicate mechanism of the human eye. A suitable goggle intercepts these rays. It also intercepts particles of rust and scale exploded from the surface of rapidly heated metal.

I remember asking a garage proprietor not long ago why he was willing to risk his eyesight by using a torch and not wearing goggles. He politely invited me to get out and mind my own business. Not many employers or boss welders are as inconsiderate and careless as he was and yet you will find plenty of welders at work with absolutely no protection for their eyes.

All sorts of helmets, goggles, body-protecting devices, asbestos shoes and so forth are today available to the welder. Make him use them. Make it easy for the welder to carry on his trade in comparative safety. When he gets hurt it costs money.

Important points summarized in conclusion are:

Insist on frequent and adequate inspection of all apparatus.

Insist that all hot articles be suitably marked.

Force the workmen to wear proper goggles and protecting devices.

Properly ventilate the welding shop to carry away any escaping gases, thus minimizing the danger of a shop explosion.

If tanks are used keep them out of direct sunlight and in a cool place, away from high temperatures.

Insist that none of your money goes to pay wages to a welder unless he is properly trained. If you refuse to employ the untrained green man he will manage to get proper training to fit himself for the job.

Properly instruct every employee who in any way comes in contact with the welding shop in regard to the hazards found in that shop.



Problems of Operating Men

Edited by
James T. Beard



Approving Use of Miner's Electric Cap Lamp by Firebosses

Fireboss' Duties Not Limited to Testing for Gas—Examination for Other Dangers Requires Better Light Than Afforded by Safety Lamp

HAVING read with interest the letters of the various correspondents appearing in *Coal Age*, it is my privilege to say that I entirely disagree with the stand taken in the letters of O. G. Sharner, in the issue of Nov. 30, p. 879, and William Dickinson in the issue of March 29, p. 530. The former states as follows: "Any official whose duties require him to test for gas in the mine should carry no other lamp than an approved testing lamp."

It is true the electric cap lamp has no value for making a test for gas; but it is of great value in examining the condition of the roof and timbering. Mine officials have more duties than simply making tests for gas. They must examine the state of the roadways and the roof at the working faces, as well as make tests for gas.

It appears to me that it would be an easy matter to make a cap to cover the headlight when making tests. Any fireboss could make such a cap for himself out of a piece of old leather or rubber and cover the headlight on the electric lamp without losing any time.

ELECTRIC CAP LAMP AN AID NOT A HINDRANCE

Surely no correspondent has given this matter any careful consideration, who can make the statement that the carrying of an electric cap lamp would delay a fireboss in his examination, or in any way prove a menace to safety. How much of a fireboss' time is actually spent in making tests for gas? Is it not a fact that a good deal more of his time is taken up in examining the roof and timbering?

Again, no one who has ever performed that work would suggest that a fireboss can travel as fast by the light of an ordinary flame safety lamp, as he can by the light of an electric cap lamp. In my opinion, any time that would be lost by a fireboss in shielding the glare of his electric cap lamp when making a test would be more than offset by enabling him to examine the roof and coal more quickly and by giving him better light for traveling from place to place on his round.

Speaking of the limited time of the fireboss, Mr. Dickinson says, "Many firebosses will take chances under such conditions and not make any effort to screen their electric lamps, which thus become a menace to safety." Let me remark that any fireboss who will take chances is not fit to be employed in that capacity. By not screening his electric lamp, the fireboss becomes the "menace to safety" and not the electric lamp.

When a fireboss has to make his examination at the

speed described by Mr. Dickinson, no doubt many times he will lose his light. My belief is, therefore that it is a great benefit to a fireboss to have an electric light so that he will not be in the dark when he loses his flame light from any cause. Then, instead of stumbling about and bumping his head and body, he can walk out with a good light and reach a point where he can relight his flame lamp with safety.

Again, in the extraction of pillars where a fireboss must examine high falls and travel in the broken, an electric lamp should be a boon to him. Any one who has performed these duties by the light of a safety lamp, knows the difficulty and the danger of the situation.

I recall many experiences of twenty-five years ago, when firebossing in a mine where nothing but naked lights were used. It was imperative that the fireboss reach the top of all caves or get as near the top as was possible. Many a time did I bump my head and cut my hands and knees in getting out of a tight corner, after losing my light. Flame safety lamps, in those days, were not equipped with self-contained relighters and an electric cap lamp would have been considered a blessing by every fireboss.

MAKE ELECTRIC CAP LAMP COMPULSORY

Allow me to suggest that, instead of mine officials who make tests for gas being debarred from carrying electric cap lamps, they should be compelled to carry them. Also, I would say that the flame safety lamp should be so regulated with a reduced flame that it can only be used for testing purposes and not as a working lamp. This would make the lamp much safer for testing purposes.

In his letter Mr. Sharner says:

"How often do we observe, assistant foremen and firebosses; yes and foremen and superintendents also, for that matter, traveling about the mine and carrying a lamp, having one side of the glass covered with soot. We must naturally conclude that if the glass is dirty, the gauze is also dirty, and the lamp for that reason unsafe. Yet there are hundreds of lamps used every day in that condition."

In that respect, let me say, if those officials each carried an electric cap lamp for a working lamp, and their safety lamps were so regulated that only a reduced flame could be obtained, their lamps could not get in the condition he describes. The same writer also thinks it would be an indication of old age and incapacity for the work, not to be able, by the light of his safety lamp, to see a crack existing in the roof. I doubt if our friend has ever looked at a crack in the roof by the light of a safety lamp, and then observed the same crack by the light of an electric cap lamp, or he would not offer such an argument.

Let the person be young or old, he will see the crack much better by the light of the electric lamp than by the glimmer of a safety. The same is true in regard to reading the vernier on a transit.

L'INCONNU.

Victoria, B. C.

Give the Fireboss the Best Possible Light

Electric cap lamp a Godsend to the fireboss—Need of a device other than the safety lamp for detecting gas—Advantage of a relighter in the safety lamp.

FOR the last thirteen years, I have worked as a safety inspector and assistant foreman. Naturally, the safety lamp was the most important part of my equipment in that work. In connection with my duties, let me say, I have spent many profitable moments recently, in reading the letters in *Coal Age*, under the heading "Problems of Operating Men."

Any one whose duties have been the examination of a mine, cannot fail to appreciate the stand taken by James Roberts of Frontier, Wyo., whose letter appeared in the issue for May 31, p. 902. Like Mr. Roberts, I have found the electric cap lamp a great advantage in my work. I regard this lamp as a Godsend to the fireboss whose greatest need will often be a good light.

More than once have I traveled to the face of a breast and there been caught in the dark and obliged to return to the gangway without a light, before being able to relight my safety lamp. Today, there is no need for a fireboss to stumble about in the dark when he has lost his light. The electric cap lamp enables him to retrace his steps in safety.

NEED OF SIMPLE DEVICE FOR DETECTING GAS

Just here, I wish to endorse the suggestion of James Hynd who, writing on the Wakesiah explosion, *Coal Age*, June 7, p. 940, asks, "Why does not the present inventive age produce a universal means of detecting gas that will eliminate the present hazard?"

As Mr. Hynd says, "We are still using the modified devices of one hundred years ago for this purpose." He refers, no doubt, to our use of the flame safety lamp, as there has not as yet been produced a testing lamp, or other device devoid of flame that will indicate the presence of explosive gas.

While recognizing the need of some device other than the safety lamp for detecting the presence of gas in the mine, I want to say that I have found the Koehler safety lamp a most efficient means for making the test for gas. My lamp is of aluminum, has a double gauze and is equipped with a flint relighter. The lamp admits the air below the glass, which greatly improves the light.

ADVANTAGE OF RELIGHTER IN SAFETY LAMP

No fireboss will deny the advantage of having a relighter in his lamp. He is bound to get in the dark some time and this device avoids the necessity of his going back to the gangway to relight his lamp. All he needs to do is to retreat a short distance and give the flint a few turns to restore the light in his lamp.

An instance illustrating this point occurred a short time since when, with two other firebosses, I entered a gangway where gas had been fired and the men had gone out leaving a mule behind. It being the duty of the firebosses to extinguish the fire, we were doing so when the gas fired again putting out all our lights.

The two firebosses had Davy lamps and but for the relighter in my Koehler lamp we would have had to travel a long distance in the dark. As it was, however, I withdrew a short distance and with a turn of the flint relighted my lamp, after which we extinguished the fire and rescued the mule.

In my opinion, when a fireboss is equipped with an approved safety lamp, such as the Koehler, and an electric cap lamp he is able to accomplish his rounds in less time and with less fatigue, than where he must work with his safety alone. Moreover, his examination of the mine will be more efficient, because of the bright light, which will reveal a dangerous condition of the roof that might pass unobserved in the use of a safety lamp.

While a good mechanic can work with inferior tools, he can do far better work with good tools at his command. The same is true in firebossing. A competent fireboss may even lose his life for want of a good light. Therefore, let me say in closing: Give the fireboss all the light possible. WILLIAM E. TRUSCOTT.

Minersville, Pa.

Obeying the Spirit of the Law and Not the Letter Only

Danger in creating too many and too stringent laws—Enforce faithfully existing laws—Instances cited where the company fulfilled the letter but not the spirit of the law.

IN TWO recent letters, C. W. Atkins has referred to the inadequacy of mining laws, in a way that should arouse attention and call for remedial action. What Mr. Atkins has said applies particularly to his own state, Pennsylvania. My remarks must not be taken as applying especially to that state more than to other coal-producing states. The situation is quite a general one. What I want to say fits many of our mining states, if not all of them.

There is little doubt but that our mining laws can and some day will be improved. In the meantime, however, by systematic, unceasing and earnest application of the laws we have, we can get a great deal closer to the goal we aim to reach than we are at present. The goal of our endeavors is to reduce mine accidents to a minimum.

ENFORCE PRESENT LAWS TO MAKE MINES SAFER

Certainly, it is not right to ask our legislators to make new laws for us so long as we fail to give a thorough trial to those now on the statute books. If at any time it may seem advisable to reinforce existing laws or replace them by others, we must be cautious lest we create a situation where too many laws or laws of too stringent a character would hamper our coal industry without making it any safer.

By willingly conforming to the spirit as well as the word of our laws as they stand to-day, operators have it in their power to make their mines so much safer that the cry for more laws will cease to be heard. Some operators deceive themselves into believing they have done all that is expected of them when they have placed a few warning signs about their mines and posted a set of rules and regulations on the bulletin board at the mine entrance. To a large number these signs mean little so long as the operator does not make it his regular and daily business to see that they are obeyed by every man in the mine.

Suppose, for example, that an old heading, partly caved and in places not more than two feet wide, is used to take several high-tension cables into the mine. At either end notice is posted forbidding men to go in or out that way. But of what use are those notices when it is known to the foreman and his assistants that a

number of men are using the heading twice daily, because it shortens the distance home and nothing is said to stop them?

A case of this kind was recently brought to the attention of a certain mine manager who, after investigating, refused to interfere on the ground that men were scarce and if they were not allowed to use the short cut in going to and from work, they would probably find work in another nearby mine which is close to their homes.

Considering the circumstances, how much better would it have been to repair the old heading and make it safe to be used as a traveling road and a cable way at the same time. Instead, however, the manager decided that posting the notice at either end of the place, the company's responsibility under the law ceased, which was true considering the word and not the spirit of the law.

In another instance two men were killed, in a single month by being thrown off the loaded cars they were riding out of the mine. Here, again, notices had been posted warning all men against riding the cars. In the opinion of the superintendent and his foreman,

this absolved them of all blame, although both freely admitted that they knew the men generally rode on the cars both going in and coming out of the mine. Yet no effort was made to stop the practice.

In this case as before, the company complied with the letter of the law, but not a single thought was given to its spirit. I could cite from memory a score of similar examples where the operators were deceiving themselves as to the extent of their duties to their fellow men either through fear of losing their miners or from a reluctance to spend money for the sake of safety alone.

There are operators, both large and small, who obey the spirit as well as the letter of the law and sometimes go much further in an effort to make their mines as safe as is reasonably possible. Too often, however, the argument is advanced that, unless the law is obeyed to the same degree by all, those obeying it fully and ungrudgingly will find themselves at a disadvantage, in respect to operating costs, as compared with those who adopt only such safety measures and practices as they cannot possibly avoid.

F. C. CORNET.

New York City.

Inquiries Of General Interest

Working Three Feet of Coal with Slate and Shale Partings

Combined Thickness of Three Seams and Partings Ranges from 12 to 15 Ft.—Thickness of Coal Approximates 7 or $7\frac{1}{2}$ Ft.

A FEW days ago, the president of a recently organized coal company, asked my opinion as to what would be the best method to develop a tract of coal land consisting of one hundred acres and underlaid by three seams of bituminous coal of a fairly good quality, two of the seams being of the nature of splint coal. At my request, he gave the following as the approximate cross-section of the three seams and the intervening partings of slate and shale. Reading from top to bottom, the section is:

Roof,	Hard sandstone
Top seam,	Hard splint coal, 42 in.
Parting,	Hard sandy shale, 48-72 in.
Middle seam,	Hard splint coal, 30-36 in.
Parting,	Medium hard slate, 18-24 in.
Bottom seam,	Rather soft clean coal, 12 in.
Footwall,	Hard sandy shale.

It was stated that the intention of the company was to work these seams by some method that would give a high percentage of production, per man, per day, and mine the coal in as large size as possible, consistent with the requirements in the several seams. It was expected to shoot all the coal off the solid, the desire being to avoid the necessity of installing mining machines, for a considerable time to come.

After carefully considering the proposition and assuming a practically level formation, I suggested open-

ing up the property on the plan of a double-entry system, provided there was no gas generated in quantities that would make advisable driving the main entries three or four abreast, this being a small tract.

My general plan was to drive double or triple rooms, say from 60 to 90 ft. in width. The main and cross entries, together with these rooms, were to be opened in the middle seam where the coal has a thickness of $2\frac{1}{2}$ to 3 ft. The two or three tracks in each double or triple room would reduce the distance the coal had to be handled at the face to not more than 15 ft. The roads were to be brushed for a width of 10 ft., by lifting the parting and bottom seam of coal down to the footwall, which would provide good floor and roof on the roads.

These double or triple rooms were to be separated by pillars of solid coal, 50 ft. in thickness, that would permit each pillar to be split with another room 20 ft. wide when retreating and bringing back the 15-ft. pillars on either side. This plan appealed to me as affording a long range of working face that would greatly facilitate the mining of the coal, particularly in respect to blasting. The holes could then be drilled to better advantage than in a narrow place. A favorable feature of the plan is the promise of a larger percentage of lump coal and a minimum cost of explosives in blasting.

When the rooms in the middle seam, which is only $2\frac{1}{2}$ to 3 ft. in thickness, have advanced sufficiently to cause a little weighting and settlement of the roof, my plan would be to break through the parting forming the roof and having a thickness of from 4 to 6 ft., dropping this material and storing it between the roads and, at the same time, taking down the top coal. A line of posts would have to be set on each side of the tracks. The main roof being a very hard massive sandstone suggests that it will require very little timbering.

Another suggestion made at the same time was that it might be found that the proposition could be worked out successfully on a system of longwall advancing, in panels 300 ft. in width. The large amount of material in the partings would furnish good building for the packwalls. I would like to see this proposition dis-

cussed by the readers of *Coal Age*, giving us the benefit of their experience under similar conditions.

Glen White, W. Va.

PRESTO.

We are pleased to submit the above proposition and proposed plan of working to the practical readers of *Coal Age* for their criticism and suggestions and hope for a hearty response.

Examination Questions Answered

Miscellaneous Questions

(Answered By Request)

QUESTION—*The length of a main-and-tail-rope haulage is 7,000 ft. (no grade); the weight of the main rope is 0.8 lb. per ft., and the weight of the tail rope 0.6 lb. per foot; the full cars weighed 6,000 lb. and the empty cars 1,800 lb., each; the train consists of 15 cars. What are the tensions on the main and tail ropes? If the average speed is 10 miles per hour, what is the horsepower due to the maximum tension of the rope?*

Review of reply made July 12, where a decimal point was unfortunately misplaced.

ANSWER—In the general arrangement of a main-and-tail-rope haulage, the main rope hauls the loaded trip from the inby parting to the shaft or slope bottom, or the tipple, as the case may be, at the same time dragging the tail rope which is attached to the rear end of the trip. The weight of this loaded trip is $15(6,000 \div 2,000) = 45$ tons; and that of the empty trip $15(1,800 \div 2,000) = 13.5$ tons. The average weight of the two ropes being 0.7 lb. per ft., the entire weight of rope, extending in and out of the mine (14,000 ft.), is $0.7(14,000 \div 2,000) = 4.9$, say 5 tons. Then, when hauling the loaded trip out of the mine, the entire moving load is $45 + 5 = 50$ tons. Assuming an average track resistance of, say 20 lb. per ton, including the drag of the rope, the average tension on the main rope is $20 \times 50 = 1,000$ lb.

On the other hand, when hauling the empty trip into the mine, the average weight of the entire moving load is $13.5 + 5 = 18.5$ tons and, for the same track resistance, the average tension on the tail rope is $20 \times 18.5 = 370$ lb.

At a speed of 10 miles per hour ($5,280 \times 10 \div 60 = 880$ ft. per min.), the horsepower due to the maximum tension on the main rope is $(1,000 \times 880) \div 33,000 = 26\frac{2}{3}$, say 27 hp., which is the power due to the maximum tension on the rope and takes no account of the efficiency of the engine. The resistance of rope and track depends on many factors not given and is liable to be more than 20 lb. per ton, the power required being increased proportionately.

QUESTION—*The fan produces 76,300 cu.ft. of air per minute, in an airway 7x10 ft. in section; (a) what is the velocity of the air current, in feet per minute? (b) What is the horsepower if the water gage is 1 in.?*

ANSWER—(a) The sectional area of the airway is $7 \times 10 = 70$ sq.ft. and the average velocity of the air current at that point is, therefore, $76,300 \div 70 = 1,090$ ft. per min.

(b) A water gage of 1 in. corresponds to a pressure

of 5.2 lb. per sq.ft., which makes the total pressure producing circulation in this airway, $70 \times 5.2 = 364$ lb. This total pressure moving at a velocity of 1,090 ft. per min., gives $1,090 \times 364 = 396,760$ ft.-lb. per min. The horsepower on the air is, therefore, $396,760 \div 33,000 = 12.02$, say 12 hp.

QUESTION—*What instructions should a mine foreman give to a miner in regard to the following: (a) The precautions he should take on first entering his working place? (b) What he should do to insure his safety while at work? (c) What he should do if his working place becomes dangerous? (d) In case of a miner firing his own shots, what precautions should he take for his own and other persons' safety? (e) What precautions should he take while traveling into and out of the mine?*

ANSWER—(a) The foreman should instruct the miner to examine carefully his place before beginning to work and reset any props that may have been dislodged by shots fired the night before. He must also be told to take down any loose slate or roof and examine carefully for loose coal that may be ready to fall. He must be told to look for the mark of the fireboss showing that the place has been examined that morning and found to be safe. In addition, he must at once set any timbers required to make his roof safe before proceeding to load coal or do other work.

(b) While at work, the miner must be instructed to keep a careful watch for any change that may take place in the roof and to sprag his coal as it is mined. When working with safety lamps, the miners must be instructed to observe the flame of their lamps at frequent short intervals to detect any increase in the gas in their places.

(c) The miner must be instructed to withdraw from his place, at once, on observing any dangerous condition and report the same to the mine foreman or one of his assistants. He should be told to fence off his room or place a suitable danger signal at the entrance and at the open crosscut or breakthrough leading to an adjoining place, and to warn the men working in adjoining places, before he leaves his own place.

(d) Each miner must be instructed to make sure, before firing a shot, that he has complied with all rules and requirements in respect to blasting, including the proper mining of the shot, the charging and tamping of the hole and the manner of firing. He must also give the necessary warning to men working in adjoining places and receive their response, giving him the right to fire his shot. He must sound the alarm in such a manner that any person approaching the place will be duly warned of his danger. After firing the shot and allowing sufficient time for the air current to sweep away the smoke and gases produced, the miner must examine the condition of the roof and timbers before again starting to work.

(e) The foreman should instruct all miners to enter and leave the mine by the travelingways used for that purpose. Every miner must hang his check in its proper place on the board provided for that purpose at the entrance of the mine, before he leaves for home. On returning to work the following morning, the miner must take his check from the board, which is the guarantee that he can proceed to work in his place with safety. Not finding his check on the board, the miner knows that he is forbidden to enter his place until the same has been examined and made safe for work.

Coal Situation Fraught with New Seriousness Because of President Harding's Death

BY PAUL WOOTON
Washington Correspondent of *Coal Age*

The President cannot die without affecting all industries and most individuals. The death of Mr. Harding comes at the worst possible time in so far as it affects the coal situation. It is certain to have a direct bearing on labor relations, which are now in such an acute stage.

While those who are in a position best to appraise the situation are convinced that there will be no strike, they must admit that the situation is one in which a crisis might develop at any time. Government intervention is more likely now than ever before in peace time, due to the fact that the public is not inclined, after the experiences of the last few years, to endure suspense as to its fuel supply.

Enough has been learned in the last few years of government intervention to make it clear that it is a diplomatic rather than an executive undertaking. To undertake to mediate in such a situation as exists today in the anthracite region means the employment of diplomacy such as is implied by the better sense of the word—the use of sympathy and understanding. Such a task can be undertaken only by a person in whom both sides have confidence.

Whatever may be said about Mr. Harding's greatness as an executive, no single individual in the land will dispute that he was a man of friendship—a man with an intense desire to do the right thing. He commanded the respect of capital and labor alike because they knew he was big-hearted and would do his best to be fair. Furthermore, the public would have been satisfied with his mediation. People generally do not have an opportunity to go into the details of issues. They would have been willing to abide by his conclusions. The man so amply fitted to undertake mediation has been removed suddenly.

It is true that the country is to be spared the aimless drifting which marked the administration's policy just before and during the strike of 1919. At that time there was great uncertainty as to the extent of President Wilson's incapacity. No one was sure whether or not the pronouncements coming from the White House were those of the President or of someone else. Later it was established that some of these pronouncements, at least, did not come from the President himself.

In the present situation the uncertainty is of a different character. There naturally will be delay before the new helmsman will feel confident to take the ship of state into the main channel. The situation is complicated by lack of knowledge as to what the new President may do. The outstanding achievement of his career is his handling of a labor matter. His action at Boston in connection with the strike of policemen brought him into national prominence and obtained for him the praise and support of those who believe a firm stand must be made against the exactions of labor unions. That act, however, antagonized labor.

It is certain the United Mine Workers would hesitate a long time before they would agree to accept President Coolidge as final arbiter of questions which to them seem vital. Unquestionably labor unions are not at all sure but that one of the principal opponents of their policies has been elevated to the Presidency. They must recognize that since Mr. Coolidge first came to national notice because of his stand against unionism it would be only natural if he were to be of the opinion that the public approves of such a policy. His experience in Boston may have convinced him that unionism must be curbed and that nothing can be gained by temporizing with it. In such a case he might conclude that the anthracite situation offers a splendid opportunity to put his views into effect.

On the other hand, many think Mr. Coolidge will take this opportunity to demonstrate that he is not opposed to labor unions when properly conducted. He may admit the right of the United Mine Workers to demand all that they have and to strike if they do not get what they ask. At best, however, it is admitted on all sides that the prospect

of agreement is less auspicious today than it was yesterday.

Many doubt that the check-off is the real objective of the United Mine Workers. The rank and file of that organization is so much more interested in wage than in any of the collateral issues, that it is not probable that the necessary support will be forthcoming to insist upon the check-off. The check-off means a great deal to those who are responsible for the financing of the International union but it means much less to the member of a local. The heads of labor unions are like political leaders or the heads of European states in that they can go only so far in persuading their people to accept solutions which are distasteful to them.

Signs are multiplying that the anthracite workers are ready to insist on the increase. Apparently the more conservative leaders, like the heads of the International union, will have great difficulty in avoiding a suspension unless they can promise a wage increase. During the last strike it was asserted at first that the anthracite workers were being held out to win for the bituminous workers, and that if they were left to themselves they would return to work. Exactly the reverse proved to be the case. It was nearly a month after the Cleveland agreement before work was resumed, and even then the terms of settlement were all but rejected when the ratification convention met in Wilkes-Barre. Steam-roller tactics had to be employed to get ratification through, and even then it carried by a small margin.

New factors have entered since then to bolster up the determination of anthracite workers. They elected Capellini. They not only elected him but they did it by a large majority. For a time after his election Capellini seemed to have joined hands with the conservative leaders, but now that he has been accepted as a member of the negotiating committee he has come out with a statement that he will not surrender any demand and that he will press each one of them. With the death of the President and with unmistakable signs of increased determination on the part of the mine workers the prevalent opinion in Washington is that the situation has taken on new seriousness.

Coal Commission Resolution Expresses Deep Loss in Passing of President

The only business transacted by the U. S. Coal Commission at its meeting last Friday was the adoption of the following significant resolution:

"The United States Coal Commission places upon its records the unanimous regrets of its members at the sudden death of Warren G. Harding, President of the United States. This is not the usual and perfunctory expression of regret at the passing away of the nation's Chief Executive. It has a personal and intimate side connected with it, which should be known by the American people.

"Every member wholeheartedly pays tribute to the patriotic and honest purpose which President Harding had in the appointment of this Commission. It is constituted of men of all grades of political thought and was manifestly so constituted by the President in the hope that out of these political and economic views the facts might be found and conservative recommendations given with reference to the coal industry. It is due, also, to his memory to say that having once made up his mind as to the membership of the Commission, from that time forward neither by word, sign nor gesture did he ever intimate to the Commission any personal or political desire with reference to the investigation, finding of facts, or recommendations of the Commission. He left it free and untrammeled, and his memory must not be smirched by any false suggestion that he had

in view any political ends to serve either by the appointment or by the report of this Commission.

"From the personal standpoint it regrets the departure of a warm-hearted personal friend. It pays him the tribute of saying that he was a worthy President of the United States; that from the standpoint of his views, he honestly and fearlessly sought to administer the laws of this country and to direct its destinies along lines which he believed would be for the best interest of the American people.

"He has been a great example that might well be imitated in the political and economic life of America. He held his views, but without bitterness or malice, and granted the right of others to differ with him. He argued; he never vilified. He had malice toward none and charity for all. After life's fitful fever, the Commission confidently believes that his soul is at rest with his God."

The early part of the week was a very active one for the Commission, as a result of the appearance of a Special Committee of Bituminous Operators. Apparently, the Commission is much pleased at having received so much constructive material. The Commission obviously is glad to have the bituminous operators meet in advance the recommendation contained in the Commission's anthracite report. It is understood in association circles that the action favorable to publicity was unanimous. It is said to bind practically every worth-while coal man in the business. Some observers believe that this voluntary action is intended to obviate the necessity for legislation.

Coal-Mine Fatalities in June Gain Slightly In Number and Ratio to Output

Accidents at coal mines during June, 1923, caused the death of 172 men, according to reports received from state mine inspectors by the U. S. Bureau of Mines. The fatality rate for the month, based upon a production of 54,155,000 tons, therefore was 3.18 per million tons. For the corresponding month last year the rate was 4.91, based on 110 fatalities and an output of 22,393,000 tons. The small amount of coal mined in June, 1922, was due to the coal strike at that time. An average of 4.28 deaths per mil-

lion tons is shown by the record for June during the past ten years. In May, 1923, the fatality rate was 3.11 per million tons produced.

The fatalities in June, 1923, have brought the total deaths for the first half of the current year to 1,221, indicating a fatality rate of 3.76 per million tons, as against 868 fatalities in the same period last year, representing a rate of 4.14. Thus the fatality rate for the present year represents a reduction of more than 9 per cent.

The year's record to date for all fatalities from all causes shows a reduction in the fatality rates per million tons for haulage accidents and for falls of roof and coal, a slight increase for explosions of gas and dust, and no material change in the rate for explosives and electricity.

Wentz Acquires New River Collieries

Purchase of the mines of the New River Collieries Co., located at Sun and Eccles, W. Va., by the Stonega Coal & Coke Co., of Big Stone Gap, Va., gives the latter company an additional output of approximately 1,000,000 tons of high-grade low-volatile smokeless coals. The mines taken over by the new owners are Sun Nos. 1 and 2, located at Sun, and Eccles mines Nos. 3, 5 and 6, located at Eccles, W. Va. The Sun and Eccles No. 6 mines operate the Sewell seam, while the other openings operate the Beckley seam. During 1921 these mines produced about 831,169 tons of coal.

The Stonega company mines have a possible production of about 5,000,000 tons of steam and gas coals and in 1921 produced between 2,500,000 and 3,000,000 tons. Its properties consist of the Arno mine, at Arno, Va.; Dunbar mine, at Roaring Fork; Exeter mine, at Exeter; Imboden mine, at Imboden; Keokee mine, at Keokee; Osaka mine, at Osaka; Roda mine, at Roda, and the Stonega mine, at Stonega.

Colonel D. B. Wentz, of Philadelphia, is president of the Stonega company; Otia Mauser, vice-president, and R. E. Taggart, general manager, both located at Big Stone Gap. J. K. McGowan is president of the New River Collieries Co.

The newly acquired mines are served by the Chesapeake & Ohio and Virginian Rys. with terminals at Hampton Roads.

COAL-MINE FATALITIES DURING JUNE, 1923, BY CAUSES AND STATES
(Compiled by Bureau of Mines and Published by *Coal Age*)

State	Underground										Shaft			Surface			Total by States						
	Falls of roof (coal, rock, etc.).	Falls of face or pillar coal.	Mine cars and locomotives.	Gas explosions and burning gas.	Coal-dust explosions (including gas and dust combined).	Explosives.	Suffocation from mine gases.	Electricity.	Animals.	Mining machines.	Mine fires (burned, suffocated, etc.).	Total.	Falling down shafts or slopes.	Objects falling down shafts or slopes.	Cage, skip, or bucket.	Other causes.	Total.	Mine cars and mine locomotives.	Boiler explosions or bursting steam pipes.	Railway cars and locomotives.	Other causes.	Total.	1923	1922
Alabama.....	6	3									9											10	3
Alaska.....																		0				0	
Arkansas.....																		1	5			1	3
Colorado.....																						1	0
Illinois.....																						16	2
Indiana.....																						7	0
Iowa.....																						2	0
Kansas.....																						0	0
Kentucky.....																						5	0
Maryland.....																						0	0
Michigan.....																						0	0
Missouri.....																						1	0
Montana.....																						2	0
New Mexico.....																						2	1
North Dakota.....																						1	0
Ohio.....																						9	4
Oklahoma.....																						1	0
Pennsylvania (bituminous)	17	3	3				3	1		1	28								2	2	2	30	25
South Dakota.....																						0	0
Tennessee.....																						2	2
Texas.....																						0	0
Utah.....																						2	2
Virginia.....																						1	3
Washington.....																						4	4
West Virginia.....	15	1	8	2		1	1			27									1	3	5	33	42
Wyoming.....																						1	1
Total (bituminous).....	71	4	29	3			5	1	4		122								4	3	8	131	107
Pennsylvania (anthracite).....	19	5	4				7			38								2	3	41	41	3	
Total, June, 1923.....	90	4	34	7		12	1	4	1	160								6	3	11	172		
Total, June, 1922.....	47	8	14	5		4	6	7	1	94								2	4	14		110	

Bituminous Coal Stocks Gain 3,000,000 Tons in June— Industrials Have 46 Days' Supply on July 1

On July 1, 1923, commercial consumers had in storage approximately 45,000,000 net tons of soft coal, according to a report just issued jointly by the Bureau of the Census, Geological Survey, and the Federal Fuel Distributor. This was an increase over the revised figures of stocks on June 1, 1923, of 3,000,000 tons. Except in the month of February stocks have steadily risen since September 1, 1922, and there is now in storage twice the quantity that was on hand on that date. The supply on July 1, 1923, was larger than on any date since the spring of 1922, when exceptionally heavy supplies had been accumulated in anticipation of the strike on April 1, 1922. Stocks on July 1 exceeded those on August 1, 1921, by 4,000,000 tons, and were nearly 5,000,000 tons larger than on April 1, 1919. Measured in terms of tons, stocks increased 7 per cent during June. Measured in terms of days' supply, the increase was 23 per cent. The larger increase in days' supply was due to the fact that the rate of consumption decreased perceptibly in June. At the rate of consumption in June the stocks on July 1 were sufficient to last 37 days on the average.

Stocks on the Lake docks at Duluth-Superior and Ashland-Washburn on July 1, 1923, were about 2,850,000 net tons. Records for the Lake Michigan docks are not available. A group of producers who store coal at mines or intermediate points had 688,000 tons in storage on July 1.

Retail dealers in anthracite received more of that coal than they delivered in June, and their total stocks on July 1 were 13 per cent larger than on June 1. Incomplete reports on the quantity of anthracite on the Duluth-Superior

total stocks on hand for all dates for which statistics are available, since October 1, 1916.

The total quantity of soft coal in the hands of commercial consumers on July 1, 1923, was between 43,000,000 and 47,000,000 net tons—probably 45,000,000 tons. This esti-

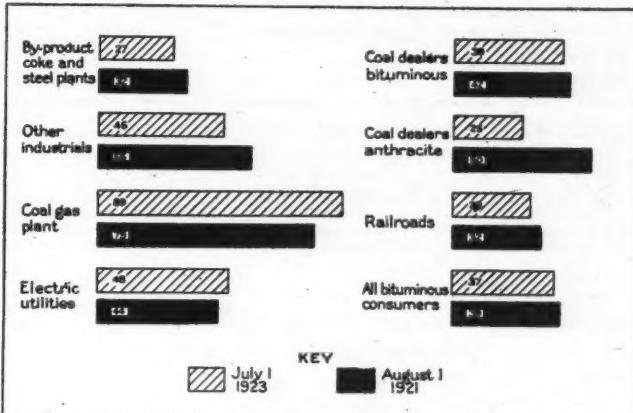


FIG. 2—DAYS' SUPPLY HELD BY DIFFERENT CLASSES OF CONSUMERS ON JULY 1, 1923, AND AUGUST 1, 1921

At the rate soft coal was burned during June, 1923, the total stocks on July 1 were sufficient to last 37 days, an increase of 7 days over the supply on June 1. The stocks on August 1, 1921, were sufficient to last 39 days at the low rate of consumption then prevailing. An important factor in the increase in days' supply on July 1 was an appreciable decline in the rate of consumption in June.

mate does not take into consideration coal in the cellars of householders, concerning which no statistics are available, nor steamship fuel, nor coal on the Lake docks, which item is classed as coal in transit. The progress in accumulation of reserves has been such that the supply on July 1, 1923, compares favorably with that during preceding summers.

Consumption, on the contrary, decreased in June. The reports furnished by consumers, supplemented by other available records, indicate that the total consumption, including exports, was approximately 41,000,000 net tons, or 9,500,000 tons per 7-day week.

Figure II, which is based upon the data in the table below, offers a comparison of the days' supply held by the seven principle classes of consumers on July 1, 1923, with that on August 1, 1921, the date which most nearly corresponds with that now under observation, for which records are available. In using that date for comparative purposes it should be carefully noted that in actual tonnage stocks were less then than now, but owing to the low rate of consumption in the summer of 1921, due to the severe industrial depression, the days' supply was larger. The average stocks on July 1 were sufficient to last 37 days at the rate of consumption in June, whereas those on August 1, 1921, were sufficient to last 39 days at the rate of consumption from August 1 to November 1 of that year. At the rate of consumption from March 1 to May 31, 1923, the supply on June 1 would have lasted 30 days.

General industrial establishments, excluding steel and by-

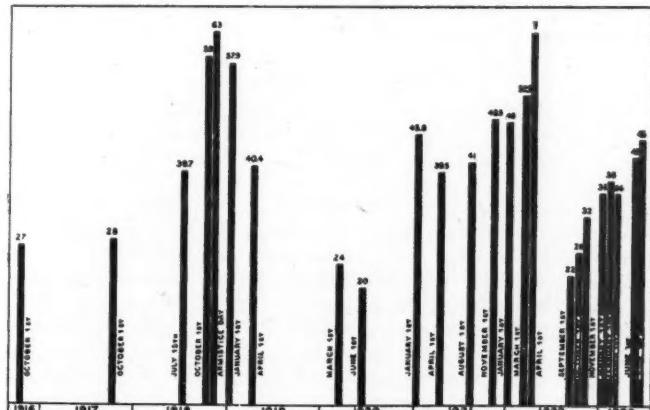


FIG. 1—TOTAL COMMERCIAL STOCKS OF BITUMINOUS COAL, OCT. 1, 1916 TO JULY 1, 1923

Figures represent million net tons and include coal in the hands of railroads, industrial consumers, public utilities, and retail dealers. Coal for steamship fuel, lake docks, in transit, and in the bins of householders is not included. The figures for 1923 are subject to revision.

and Ashland-Washburn docks indicate that the total on hand July 1 was in the neighborhood of 250,000 net tons. No data are available for the Lake Michigan docks.

The accompanying diagram (Fig. 1) shows the estimated

DAYS' SUPPLY OF BITUMINOUS COAL IN HANDS OF CONSUMERS (a)

(Figures represent number of days' supply would last at current rate of consumption at time of stock-taking)

Consumer	Jan. 1, 1919	Apr. 1, 1919	June 1, 1920	Apr. 1, 1921	Aug. 1, 1921	Sept. 1, 1922	Nov. 1, 1922	Jan. 1, 1923	Feb. 1, 1923	Mar. 1, 1923	June 1, 1923	July 1, 1923
By-product coke plants.....	32	23	8	28	31	11	18	22	22	21	25	27
Steel plants.....	42	35	11	38	46	12	21	40	36	34	39	46
Other industrials.....	65	47	24	47	56	32	39	60	62	58	75	89
Coal-gas plants.....	81	58	22	66	79	34	55	32	33	35	34	45
Electric utilities.....	49	48	22	48	44	26	32	33	35	34	45	48
Coal dealers, bituminous.....	39	25	10	26	42	11	21	16	15	11	27	39
Railroads.....	32	(c)	10	24	(c)	13	13	16	18	16	21	28
Total bituminous.....	42	31	15	36	39	17	23	26 (d)	24 (d)	22 (d)	30 (d)	37 (d)

(a) The figures in this table are estimates based on incomplete data. (b) See text for rate of consumption at which these figures were calculated. (c) No data (d) Subject to revision.

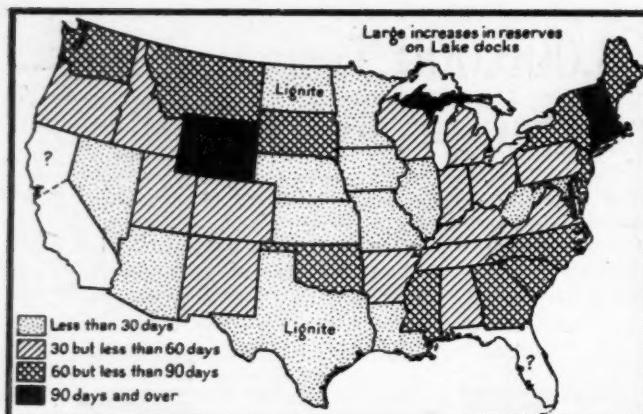


FIG. 3—DAYS' SUPPLY OF SOFT COAL ON HAND AT INDUSTRIAL PLANTS ON JULY 1, 1923

At the average rate of consumption that prevailed during June, 1923, reserve stocks at industrial plants other than steel and by-product coke would last on the average 46 days. The map shows how the supply varied from State to State. Changes in business activity which affect coal consumption are quickly reflected in the days' supply. Based on reports from 2,107 plants.

product coke plants, form the largest group of consumers and the one that shows best the geographical distribution of stocks. Changes in activity in this group are quickly reflected in the coal market, and changes in the coal market soon become apparent in the reserve stocks of industrials.

Over the country as a whole the stocks held by general industrials were sufficient to last 46 days on the average. This was an increase of 7 days over the supply on June 1, but was 10 days less than that on August 1, 1921. In comparison with dates on which stocks held by industrials were large, July 1, 1923, was 19 days behind January 1, 1919, 18 days behind January 1, 1922, 21 days behind November 1, 1921, and 5 days behind January 1, 1922. On the other hand, stocks on July 1 were 14 days ahead of September 1, 1922, and 22 days ahead of June 1, 1920, on which dates the supply was at the lowest points on record.

Practically all the States on the Atlantic seaboard, except those in which coal is produced, the Northern Peninsula of Michigan, and scattered states in the South and Northwest, had supplies sufficient for more than 60 days. Maryland, West Virginia, and Illinois as usual had small reserves, owing to the presence of mines within their boundaries. All other States east of the Mississippi had stocks sufficient for 30 but less than 60 days' consumption. Of the States west of the Mississippi, 10 had less than a 30-days' supply, 6 had less than a 60-days' supply, and 5 had more than a 60-days' supply.

Electric-utility plants had stocks on hand on July 1 sufficient for 48 days, against 45 days' supply on June 1.

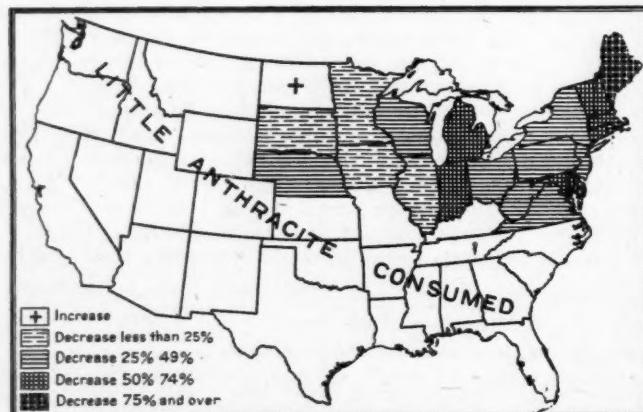


FIG. 4—HOW RETAILERS' STOCKS OF ANTHRACITE ON JULY 1, 1923, COMPARED WITH THOSE ON AUGUST 1, 1921

Stocks of anthracite in retail yards were 13 per cent larger on July 1 than on June 1, 1923. The supply was sufficient to last on the average 25 days at the rate of delivery in June. The map shows how stocks on July 1, 1923, compared with those on August 1, 1921. In only one of the anthracite-consuming States was the supply greater than it was 2 years ago.

The stocks at coal-gas plants increased from a 75-days' supply on June 1 to 89 days' on July 1, 1923. Incomplete returns from byproduct coke and steel plants indicate that the reserve coal tonnage on hand at such plants on July 1, 1923, was about 5 per cent larger than on June 1. Operations at such plants were curtailed somewhat during June and the days' supply on July 1 was 27, against 25 on June 1, an increase of 8 per cent. The stocks held by these important groups of consumers are now twice those on hand September 1, 1922, but in spite of this progress in replacing stocks that were so nearly exhausted during the miners' strike last summer, reserves on July 1 were below those on other dates when stocks were large.

Estimates of railroad-fuel stocks place the total in stockpiles, cars, and chutes, on July 1, at 10,550,000 tons, a supply sufficient for 28 days, an increase over June 1 of 33 per cent.

Deliveries of soft coal by retail dealers decreased in June, the average rate being 22 per cent less than that during the three months preceding. On July 1, 1923, retailers had a supply sufficient to last 39 days, as against 27 days' supply on June 1.

All available information indicates that during June there was a comparatively small increase in the quantity of coal in transit which probably did not exceed 5,000,000 tons.

Information available indicates that the total soft coal on all Lake docks must have been at least 4,000,000 tons on July 1. On August 1, 1921, a month later, the total was 8,189,000 tons. The quantity of unbilled coal in cars standing at the mines increased from 421,000 tons on June 1, to 550,000 tons on July 1. The tonnage at junction points and terminals underwent practically no change in June, and totaled 35,000 tons on July 1.

Owing to the duplication of reports from one large producer who stores coal at the mines, the figures of mine storage recently published have been too high. The total held on July 1, by the producers that reported was 688,000 tons, against a revised figure of 779,000 tons on June 1, a decrease of 12 per cent.

Surplus stocks of by-product coke were accumulated in June, and the total on hand on July 1 was 308,000 tons, an increase of 52.5 per cent over the supply on June 1. Despite this increase, however, stocks of by-product coke were less than half those on March 1, 1922, when the reserve was heaviest.

The stocks of anthracite in retail coal yards on July 1, 1923, though 13 per cent larger than on June 1, were much lower than during the spring and summer of preceding years. It has not been possible for the Government to make a complete count, but a selected list of 418 dealers from whom reports have been received since 1919, shows total stocks of 787,426 tons on July 1, against 694,922 tons on June 1, 1923. These plants had 49 per cent less anthracite on hand on July 1 than on August 1, 1921, and 17 per cent less than on January 1, 1919. How much anthracite all dealers had is not known, but it is possible that the relation between stocks held by this group on different dates, might approximately represent all dealers.

Kanawha the Belgium of Coal Industry Operators Tell Coal Commission

Charging that the Kanawha coal fields of West Virginia have been made the battle ground of union activities, the Kanawha Coal Operators' Association in a brief filed with the United States Coal Commission on Aug. 6 declares that the public cannot be assured of an adequate supply of coal at a low price until some means is found for preventing nationwide strikes in the coal and transportation industries.

Stimulated unrest in the Kanawha district, charged to the machinations of the United Mine Workers, the brief states, is directly responsible for some of the acute suffering among consumers of coal during the national strike. It is contended that while the Kanawha fields were providing fuel for those sections of the country affected by the strike, the United Mine Workers centered their activities on that zone in an effort to decrease even that production.

"From the beginning the Kanawha district of West

Virginia has been the Belgium of the coal industry," the brief states. "It has repeatedly been a battle-ground in struggles which properly involved only the Central Competitive Field. Every time there was a strike in Ohio or any of the other unionized states, organizers were sent to West Virginia to create dissatisfaction and cause strikes, in order that coal mines in the Kanawha district should not supply the markets of the unionized districts and thereby render less acute the shortage of coal to the public which the union leaders hoped to create."

After pointing out certain of the evils, the Association makes several recommendations whereby it claims these evils can be eliminated. Some of these are that no further extension of the labor monopoly of the United Mine Workers of America should be permitted; the right of non-union men to work without discrimination and without fear of physical violence should and must be preserved; the United Mine Workers of America should be made legally responsible for the fulfillment of the contracts into which they enter; the Sherman Anti-Trust Law and the other laws governing monopolies and contracts and combinations in restraint of trade should be enforced against attempted monopolies of labor as well as against attempted monopolies of capital; some means must be found for preventing nation-wide strikes in the coal industry and in transportation as well; measures must be taken to restore the impaired credit of the railroads and thereby make it possible for them to obtain funds for needed improvements and extensions, and some method of insuring the prompt returns of coal-carrying equipment to the coal-originating roads must be devised.

Examiner Kephart Recommends Revision of Docks and Illinois Coal Rates

The Northwest coal rate case about which so much interest was centered in the past six months was reported on by C. I. Kephart, an examiner of the Interstate Commerce Commission on Aug. 3. He recommends modification of the Holmes and Hallowell scale from Lake Superior docks to points in Minnesota, North Dakota and South Dakota reducing the scale on rates up to 350 miles. The reductions range from 10c. (present rate 85c. to proposed rate of 75c. for distances of 35 miles or less) to a reduction of 1c. from \$3.10 to \$3.09 for distances of 300 to 325 miles. It is further recommended that rates on bituminous coal from Lake Superior docks to Marshalltown, Lacey, and Oscaloosa, Iowa, be considered unreasonable to the extent that they exceed \$3.10, \$3.35 and \$3.35 and to other related points in the same territory on the same basis. This represents reductions of 18c. and 17c. below rates.

The rates on bituminous coal and anthracite from Lake Superior docks to Sioux City, Iowa, are held to be unreasonable to the extent that they exceed \$3.35 and \$3.53 per ton, respectively. Present rates are \$3.59 on bituminous coal and \$3.89 on anthracite and the reductions recommended are 24c. and 36c. respectively. Rates on coal from all the Illinois mines to Sioux City are held to be unreasonable, unduly prejudicial to Sioux City and preferential of Minnesota, Nebraska, and other Iowa points to the extent that they exceed \$3.45 from Northern Illinois and Fulton-Peoria, \$3.83 from Springfield, \$4.08 from Belleville and \$4.20 from Southern Illinois. Reductions per ton range from 22c. to 35c.

The rates on soft coal from Lake Michigan docks and the various Illinois districts to South Dakota points west of the Aberdeen-Mitchell-Yankton line of the Milwaukee are held to be unreasonable to the extent that they exceed the Aberdeen-Redfield-Mitchell-Yankton rates by amounts ranging from 38c. at Chamberlin to \$2.00 at Rapid City; also to the extent that the rate at Winner exceeds \$5.20 from Michigan docks, Northern Illinois, and Fulton-Peoria, and that amount plus existing differentials from Southern Illinois groups.

The examiner finds that rates from Southern Illinois and Lake Michigan docks to Wisconsin points are unduly prejudicial to the dock shippers and preferential of shippers in Southern Illinois "to the extent that the difference between the rates from the two sources of supply to the same point

depart from the difference that results from the application of the scale set out before and in the matter stated from Herrin as a representative Southern Illinois shipping point." The scale referred to recommends rates from Herrin as a representative point ranging upwards from \$1.40 on lump coal for distances of 100 to 125 miles to \$4.04 for distances of 675 to 700 miles.

The existing relationship between Lake Michigan docks under the Wisconsin rate structure should not be disrupted on this record according to the examiner.

Uncertain Political Situation Reacts On German Coal Importation

BY H. O. HERZOG

BERLIN, July 13: Importation of coal into Germany is becoming more and more affected by impending political developments. Despite a marked improvement in business and the shortage of domestic production due to labor unrest, coal dealers maintain a strong reserve with regard to new import contracts. This is partly due to the difficulties of financing, increased by the restraint the government has put on the money market against exchanging German paper money into foreign money, restricting purchases to such as can be paid from export proceeds. The main factor, however, is that the Ruhr occupation has visibly entered into its last stage and the end is within sight although the issue is still entirely in the dark. Whether it will be unconditional surrender or an equitable settlement, the outcome must be that mining in the Ruhr will be resumed in the near future.

Whether the end of passive resistance in the Ruhr will immediately relieve the coal situation of the German interior is uncertain, but if the terms of surrender are such that it will not, it will be a severe blow to German industry. In any event the coal boom on the import market has, in the common opinion come to an end. Import contracts will hardly be permitted to exceed the demand of the immediate future. Strenuous efforts are being made by Germany's immediate neighbors, Poland and Czechoslovakia to increase their share of coal exports to Germany. Poland is striving to increase her surplus, employing such drastic measures to this end as fining mines for shortage of production. Czechoslovakia has reduced freight rates to promote the movement of coal. Any increase of imports from these two sources would chiefly be at the expense of the British market.

Union Gets Herrin Mine Aug. 20

Acquisition by officials of District 12, United Mine Workers, of the Lester strip mine at Herrin, Ill., the cause and scene of the bloody battle between organized and unorganized labor a year ago, has given rise to much conjecture.

What is the miners' union going to do with the mine now that it has bought it? Frank Farrington, president of the Illinois Mine Workers' organization, frankly says he does not know. He intimates that they may sell it or lease it. A report that the purchase was not in complete accord with the sympathies of the executive board is denied by Farrington, who says that there has never been a question about the wisdom of buying the mine.

Why did the union buy the mine? President Farrington says the purchase was made because the organization thought it would be advantageous to buy it, for reasons which he does not care to explain. From anthracite sources it has been learned that the mine workers' organization was in danger of damage suits totalling more than \$1,000,000, which would and could be collected without difficulty if the Lester interests cared to bring the suits. If the organization owned and controlled the mine there would be no suits.

The property was bought from the Southern Illinois Coal Co. for \$726,000. The entire capital stock of the mine was bought outright and it is now running full blast, with a daily output of between 1,200 and 1,500 tons. The miners' organization will get possession on Aug. 20, and indications are that the mine will run as usual, with the profits going into the treasury of the United Mine Workers.

Production and the Market

Weekly Review

In the absence of other than nominal car shortage, the soft coal market continues in its mid-summer slump. Production of bituminous coal is being maintained a little short of 11,000,000 tons per week of which a million tons is being stocked by consumers or exported. Distress coal is not uncommon and the level of spot prices is steadily but slowly dropping, having fallen 20c. in the last eight weeks.

Buyers are in position to pick and choose and are exercising judgment in the coal they are buying. The Geological Survey estimates that 3,000,000 tons of soft coal were added to the consumers' stockpiles in June, bringing the total in the country on July 1 to 45,000,000 tons, equivalent to 37 days' supply at the June rate of consumption.

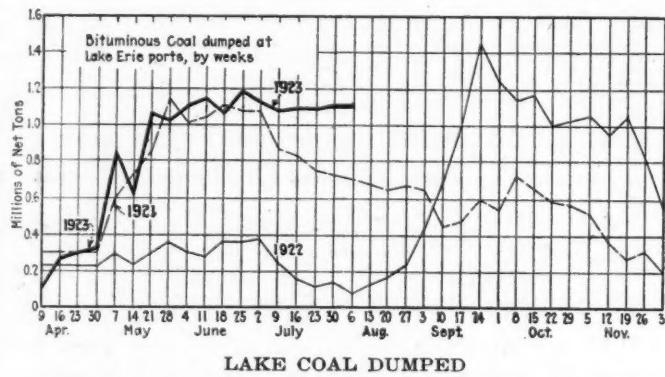
Coal Age Index of spot prices dropped one point last week to 195 on Aug. 6, which corresponds to an average price of \$2.36 at the mines. The heaviest decline was in Pocahontas coal which recorded an average drop of 30c., the result mainly of material declines in both mine-run and prepared coals on the Chicago market. In the West, Mt. Olive and Standard quotations declined and Hocking dropped in the East. Pittsburgh, Cambria, Somerset, Kanawha, eastern Ohio, and eastern Kentucky prices gained slightly.

ANTHRACITE CONSUMERS WANT COAL

So far there is no evidence of excitement in the trade over the prospect of a suspension of anthracite mining on Sept. 1. Consumers are no more insistent now than in June that their winter supply be delivered. Receipts of domestic sizes of anthracite by retail dealers have overtaken their deliveries and dealers' stocks are increasing. The demand for substitutes is picking up and coke producers report the receipt of many inquiries and some orders. Byproduct coke plants are reported to be accumulating stocks of coke. Bituminous

coal is finding some market as a substitute for anthracite.

The outlook for steam coal demand is improving as the textile industries in New England show signs of revival and the steel industry begins to talk about going back on heavy schedule as soon as the hot weather is over. Buying of steam coal picked up last week in Ohio and Pittsburgh but demand is so quiet and so carefully limited to low-priced, high-grade coals that mines are being closed for lack of profitable outlets for their product. In the Middle West the number of

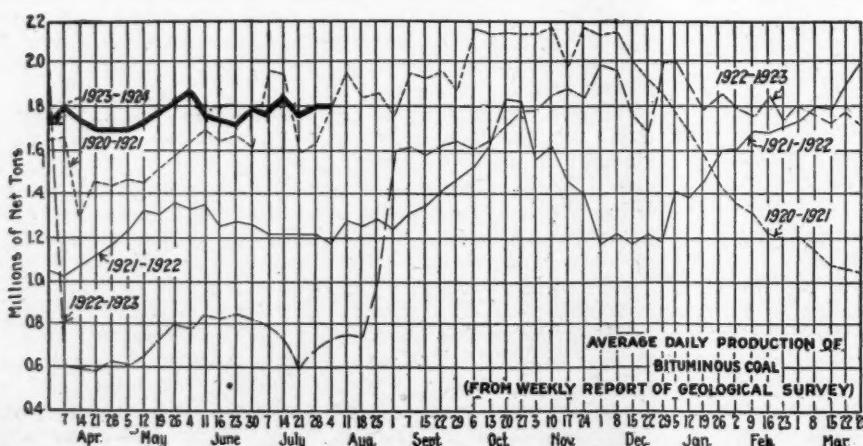


	Week Ended July 30	Season to July 30
Cargo	1,071,044	13,928,694
Fuel	56,773	704,390
Total	1,127,817	14,633,084

Compiled from Weekly Report of Geological Survey.

inquiries is increasing. Dealers have begun to take on small lots of domestic coal.

The exceptional rate of production of anthracite of 2,000,000 net tons per week is being maintained without a break. Independent prices are holding up to the high level of July and there is every indication that by the end of August a new high record for production



Estimates of Production

	Net Tons	
BITUMINOUS		
July 14 (6)	4,123,000	10,925,000
July 21 (6)	3,692,000	10,576,000
July 28 (a)	3,952,000	10,789,000
Daily average	659,000	1,798,000
Calendar year	203,295,000	314,404,000
Daily av. cal. year	1,145,000	1,776,000
ANTHRACITE		
July 14	32,000	2,051,000
July 21	28,000	2,005,000
July 28	27,000	2,080,000
Calendar year	23,435,000	58,885,000
COKE		
July 21 (b)	104,000	360,000
July 28 (a)	111,000	361,000
Calendar year	3,627,000	11,543,000

(a) Subject to revision. (b) Revised from last report.

will be established for five consecutive summer months. The Lake demand is unabated and dumpings continue at the rate of 1,000,000 tons a week or better. Dumpings at Hampton Roads for all accounts during the week of Aug. 2, were 438,733 net tons compared with 392,249 tons the previous week. Having been for the past four months below the rate for the previous two years, tidewater movement through this port is now expected to exceed the records of either 1921 or 1922 for August and September.

Midwest Feels an Upturn

The market as viewed from Chicago during the past week had no high lights. A gradual but extremely slow upturn was noticeable. Inquiries are getting thicker and small purchases by dealers are putting a little bottom into a heretofore bottomless domestic market. Steam buyers, many of them with stocks on hand, are demanding nothing but there is just enough call to absorb the small volume of high grade screenings produced in Illinois and Indiana. The

number of Central Illinois operations has been a little larger during the past two weeks but some of the operators who reopened early in July are having hard sledding to place anything with their best lump ranging from \$2.50 to \$2.75 and with screenings at \$1.35@\$1.40.

Little business in eastern or southern soft coals is done around Chicago just now, except in smokeless. High grade West Virginia smokeless mine run has been in some demand because the price dropped to \$2.50@\$3 and dealers have been stocking all they could get. Lump and egg did not tumble as far because very little of it is being made, but the old \$6 price is not so well maintained now. Some distress coal has been offered in Chicago as low as \$5.25.

Trade Picks Up in St. Louis

A little activity in domestic coal is the only change in St. Louis. This is principally for good coals at a moderate price. The dealers are pretty well loaded up. It is estimated there must be about 15,000 tons of anthracite stored in the retail yards locally and movement in this is easy. Very little coke and no smokeless is selling. Mt. Olive domestic trade

Current Quotations—Spot Prices, Bituminous Coal—Net Tons, F.O.B. Mines

	Market Quoted	Aug. 7, July 23, July 30,			Aug. 6, 1923†	Market Quoted	Aug. 7, July 23, July 30,			Aug. 6, 1923†		
Low-Volatile, Eastern		1922	1923	1923			Midwest		1922	1923		
Smokeless lump.....	Columbus....	\$5.60	\$6.00	\$5.85	\$5.75@ \$6.00		Franklin, Ill. lump.....	Chicago....	\$3.65	\$3.65	\$3.00@ \$4.35	
Smokeless mine run.....	Columbus....	5.25	3.25	3.00	2.75@ 3.25		Franklin, Ill. mine run.....	Chicago....	3.00	2.85	2.75@ 3.00	
Smokeless screenings.....	Columbus....	5.10	2.90	2.80	2.25@ 2.50		Franklin, Ill. screenings.....	Chicago....	1.65	1.65	1.45@ 1.85	
Smokeless lump.....	Chicago....	6.35	6.10	6.10	5.50@ 6.00		Central, Ill. lump.....	Chicago....	2.60	2.60	2.50@ 2.75	
Smokeless mine run.....	Chicago....	6.25	3.60	3.60	2.50@ 3.00		Central, Ill. mine run.....	Chicago....	2.10	2.10	2.00@ 2.25	
Smokeless lump.....	Cincinnati....	5.90	6.00	5.75	5.50@ 6.00		Central, Ill. screenings.....	Chicago....	1.45	1.35	1.35@ 1.40	
Smokeless mine run.....	Cincinnati....	5.50	3.35	3.35	3.00@ 3.50		Ind. 4th Vein lump.....	Chicago....	3.35	3.35	3.25@ 3.50	
Smokeless screenings.....	Cincinnati....	5.40	3.00	3.00	2.50@ 3.25		Ind. 4th Vein mine run.....	Chicago....	2.60	2.60	2.50@ 2.75	
*Smokeless mine run.....	Boston....	8.90	5.60	5.45	5.25@ 5.50		Ind. 4th Vein screenings.....	Chicago....	1.60	1.60	1.50@ 1.75	
Clearfield mine run.....	Boston....	6.90	2.35	2.35	2.00@ 2.75		Ind. 5th Vein lump.....	Chicago....	2.85	2.85	2.75@ 3.00	
Cambria mine run.....	Boston....	7.40	2.85	2.85	2.75@ 3.25		Ind. 5th Vein mine run.....	Chicago....	2.10	2.10	2.00@ 2.25	
Somerset mine run.....	Boston....	6.90	2.60	2.60	2.25@ 3.00		Ind. 5th Vein screenings.....	Chicago....	1.45	1.45	1.40@ 1.50	
Pool I (Navy Standard).....	New York....	.....	3.35	3.35	3.00@ 3.50		Mt. Olive lump.....	St. Louis....	3.00	3.00	2.75@ 3.25
Pool I (Navy Standard).....	Philadelphia....	.....	3.50	3.45	3.20@ 3.65		Mt. Olive mine run.....	St. Louis....	2.00	2.00	2.00
Pool I (Navy Standard).....	Baltimore....	8.65	2.65	2.75	2.35@ 2.75		Mt. Olive screenings.....	St. Louis....	1.75	1.75	1.50
Pool 9 (Super. Low Vol.).....	New York....	8.25	2.65	2.60	2.40@ 2.85		Standard lump.....	St. Louis....	2.55	2.55	2.10@ 2.50	
Pool 9 (Super. Low Vol.).....	Philadelphia....	8.25	2.65	2.60	2.40@ 2.85		Standard mine run.....	St. Louis....	1.85	1.85	1.85	
Pool 9 (Super. Low Vol.).....	Baltimore....	7.25	2.40	2.40	2.40@ 2.50		Standard screenings.....	St. Louis....	.90	.90	1.00@ 1.10	
Pool 10 (H.Gr. Low Vol.).....	New York....	8.00	2.25	2.25	2.00@ 2.50		West Ky. lump.....	Louisville....	\$6.35	2.15	2.25	2.15@ 2.35
Pool 10 (H.Gr. Low Vol.).....	Philadelphia....	8.00	2.25	2.15	2.10@ 2.40		West Ky. mine run.....	Louisville....	6.25	1.70	1.60	1.35@ 1.85
Pool 10 (H.Gr. Low Vol.).....	Baltimore....	7.25	2.20	2.25	2.25@ 2.30		West Ky. screenings.....	Louisville....	6.10	1.05	1.05	.85@ 1.25
Pool 11 (Low Vol.).....	New York....	7.25	1.95	2.00	1.60@ 2.00		West Ky. lump.....	Chicago....	6.85	2.10	2.10	2.00@ 2.25
Pool 11 (Low Vol.).....	Philadelphia....	7.85	1.85	1.85	1.80@ 2.19		West Ky. mine run.....	Chicago....	6.75	.95	.95	1.25@ 1.35
Pool 11 (Low Vol.).....	Baltimore....	7.25	1.95	2.00	2.00							
High-Volatile, Eastern												
Pool 54-64 (Gas and St.).....	New York....	7.85	1.75	1.80	1.65@ 2.00							
Pool 54-64 (Gas and St.).....	Philadelphia....	7.85	1.70	1.80	1.70@ 1.95							
Pool 54-64 (Gas and St.).....	Baltimore....	6.25	1.70	1.70	1.70							
Pittsburgh se'd gas.....	Pittsburgh....	2.65	2.65	2.60	2.60@ 2.75							
Pittsburgh mine run (St.).....	Pittsburgh....	1.95	1.95	2.00@ 2.15								
Pittsburgh slack (Gas).....	Pittsburgh....	1.45	1.45	1.50@ 1.60								
Kanawha lump.....	Columbus....	5.60	3.00	3.00	2.75@ 3.25							
Kanawha mine run.....	Columbus....	5.50	1.85	1.85	1.75@ 2.00							
Kanawha screenings.....	Columbus....	5.10	1.05	1.10	1.00@ 1.15							
W. Va. lump.....	Cincinnati....	5.85	2.85	3.10	3.00@ 3.25							
W. Va. Gas mine run.....	Cincinnati....	5.85	1.50	1.55	1.50@ 1.75							
W. Va. Steam mine run.....	Cincinnati....	5.50	1.50	1.55	1.50@ 1.75							
W. Va. screenings.....	Cincinnati....	5.10	1.05	.85	1.00@ 1.10							
Hocking lump.....	Columbus....	5.85	2.75	2.75	2.50@ 3.00							
Hocking mine run.....	Columbus....	5.50	1.85	1.85	1.75@ 2.00							
Hocking screenings.....	Columbus....	5.35	1.25	1.15	1.00@ 1.20							
Pitts. No. 8 lump.....	Cleveland....	7.85	2.55	2.50	2.10@ 3.00							
Pitts. No. 8 mine run.....	Cleveland....	7.85	1.95	1.80	1.85@ 2.00							
Pitts. No. 8 screenings.....	Cleveland....	7.85	1.25	1.25	1.20@ 1.35							

	South and Southwest	Birmingham....	3.50	3.25	3.25	3.40@ 3.65
Big Seam lump.....	Birmingham....	3.20	1.95	1.95	1.75@ 2.25	
Big Seam mine run.....	Birmingham....	3.50	2.35	2.35	2.25@ 2.50	
Big Seam (washed).....	Birmingham....	6.35	2.85	2.85	2.75@ 3.50	
S. E. Ky. lump.....	Chicago....	6.25	2.10	2.10	1.75@ 2.00	
S. E. Ky. mine run.....	Louisville....	5.85	2.70	2.90	2.75@ 3.00	
S. E. Ky. lump.....	Louisville....	5.75	1.75	1.75	1.50@ 2.00	
S. E. Ky. mine run.....	Louisville....	5.60	1.00	1.00	.75@ 1.25	
S. E. Ky. screenings.....	Louisville....	5.85	3.00	3.10	2.75@ 3.50	
S. E. Ky. mine run.....	Cincinnati....	5.75	1.50	1.55	1.40@ 1.75	
S. E. Ky. screenings.....	Cincinnati....	5.60	.90	.85	.80@ 1.00	
Kansas lump.....	Kansas City....	5.25	4.00	4.00	3.50@ 4.50	
Kansas mine run.....	Kansas City....	5.15	3.25	3.25	3.00@ 3.50	
Kansas screenings.....	Kansas City....	4.90	2.60	2.60	2.50@ 2.75	

* Gross tons, f.o.b. vessel, Hampton Roads.

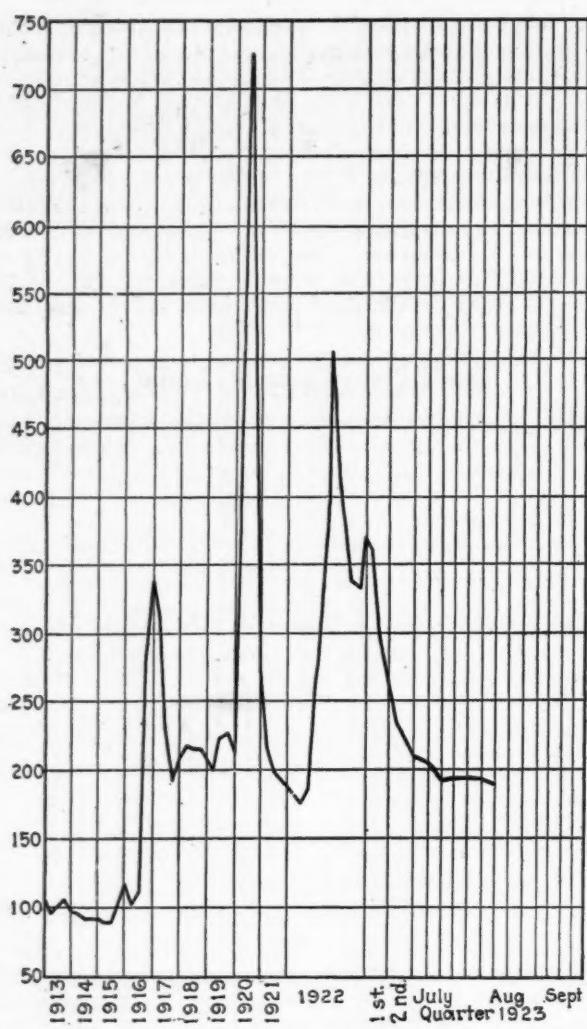
† Advances over previous week shown in heavy type, declines in italics.

Current Quotations—Spot Prices, Anthracite—Gross Tons, F.O.B. Mines

	Market Quoted	Freight Rates	Dec. 26, 1922	Independent Company	July 30, 1923	Independent Company	Aug. 6, 1923†
Broken.....	New York....	\$2.34	\$9.00	\$7.75@ \$8.25		\$7.75@ \$8.35	
Broken.....	Philadelphia....	2.39		7.90@ 8.10		7.90@ 8.10	
Egg.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	\$8.50@ 12.75	8.00@ 8.35	
Egg.....	Philadelphia....	2.39	9.25@ 11.00	8.10@ 8.35	9.25@ 11.00	8.10@ 8.35	
Egg.....	Chicago*....	5.06	12.50@ 13.00	7.20@ 8.25	8.50@ 12.00	7.25@ 7.45	
Stove.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	8.50@ 13.00	8.00@ 8.35	
Stove.....	Philadelphia....	2.39	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35	
Stove.....	Chicago*....	5.06	12.50@ 13.00	7.35@ 8.25	8.50@ 12.00	7.25@ 7.45	
Chestnut.....	New York....	2.34	9.25@ 12.00	8.00@ 8.35	8.50@ 12.75	8.00@ 8.35	
Chestnut.....	Philadelphia....	2.39	9.25@ 11.00	8.15@ 8.35	9.25@ 11.00	8.15@ 8.35	
Chestnut.....	Chicago*....	5.06	12.50@ 13.00	7.35@ 8.35	8.50@ 12.00	7.25@ 7.45	
Ranges.....	New York....	2.34		8.25		8.30	
Pea.....	New York....	2.22	7.00@ 11.00	6.15@ 6.30	6.00@ 6.30	6.75@ 8.00	6.00@ 6.30
Pea.....	Philadelphia....	2.14	7.00@ 8.00	6.15@ 6.20	7.00@ 7.50	6.15@ 6.20	7.00@ 6.20
Pea.....	Chicago*....	4.79	7.00@ 8.00	5.49@ 6.03	7.00@ 8.50	5.30@ 5.65	7.00@ 8.50
Buckwheat No. 1.....	New York....	2.22	4.00@ 5.00	4.00@ 4.10	2.75@ 3.50	3.50@ 4.15	3.00@ 3.50
Buckwheat No. 1.....	Philadelphia....	2.14	5.00	4.00	2.75@ 3.50	3.50	3.50@ 4.15
Rice.....	New York....	2.22	3.00@ 3.25	2.75@ 3.00	2.00@ 2.50	2.50	2.25@ 2.50
Rice.....	Philadelphia....	2.14	2.50@ 2.75	2.75@ 3.00	1.75@ 2.50	2.50	1.75@ 2.50
Barley.....	New York....	2.22	1.75@ 2.00	1.50@ 2.00	1.25@ 1.50	1.50	1.25@ 1.50
Barley.....	Philadelphia....	2.14	1.00@ 1.75	2.00	1.15@ 1.50	1.50	1.15@ 1.50
Barley.....	New York....	2.22		2.10	1.40@ 1.60	1.60	1.25@ 1.60

* Net tons, f.o.b. mines.

† Advances over previous week shown in heavy type, declines in italics.



Coal Age Index of Spot Prices Bituminous Coal F.O.B. Mines

	1922	1923
Index	Aug. 6	July 30
Weighted average price	\$2.36	\$2.37

1922
July 23 Aug. 7
1st 2nd

This diagram shows the relative, not the actual, prices on fourteen coals, representative of nearly 90 per cent of the bituminous output of the United States weighted first with respect to the proportions each of slack, prepared and run-of-mine normally shipped, and second, with respect to the tonnage of each normally produced. The average thus obtained was compared with the average for the twelve months ended June, 1914, as 100, after the manner adopted in the report on "Prices of Coal and Coke, 1913, 1918," published by the Geological Survey and the War Industries Board.

is flat and Standard is unusually slow. Wagonload steam is off and carload light, with no steam from the country. Country domestic call is picking up on cheaper coals. No heavy tonnage is involved, but scattering inquiries come in.

Kentucky Suffers Little

Operations in Western Kentucky are not showing much improvement. The field is operating about one-third time. Out of about 176 of the better mines, only about 100 are operating. Car supply is full. Prices continue relatively low, but as good as could be expected considering competition, general conditions, and the season. Mine run is quoted as low as \$1.35 a ton. Production of coal by the stripping process has been increasing in Western Kentucky, and is causing the pit mine operators to do a lot of knocking.

There has been a somewhat improved demand on the Louisville market for steam coal over the past few days, and some nice orders have been placed by large consumers of screenings, including industries and utilities, while inquiry is somewhat better all along the line. This has resulted in advances on Eastern Kentucky screenings, of from 15 to 25 cents a ton, but other sizes are showing no improvement. A few of the coal men are feeling more optimistic and are endeavoring to bull the market by quoting over the market price but selling under it. However, on

prepared sizes \$3.50 appears to be just about the top for fine 6-in. block from the gas coal districts of Eastern Kentucky, and very little coal is moving at that price.

It seems that the principal advance is in screenings, and this is more largely due to reduced production, as a result of many mines being down, and lack of prepared coal orders. Movement to the Lakes has been good.

Northwest Stocks Anthracite

Receipts of coal at Duluth fell off during the week. Only fifty cargoes reached the Head-of-the-Lakes docks. Five of these were anthracite. Last week sixty cargoes arrived of which ten were hard coal. This falling off is attributed to the fact that many docks are unwilling to take a chance of being caught with a large amount of unsalable bituminous on hand. Only twenty-two cargoes are reported on the way from lower lake ports of which but two are hard coal. The delay of the I. C. C. in handing down a rate decision in the Southern Illinois coal matter is causing much apprehension.

The buying situation remains the same. Public utilities are taking a little coal and railroads are helping out some but the general market is dead. Dealers and other consumers are buying from hand to mouth.

Hard coal demand far exceeds the supply. Prices on hard coal are firm at last week's levels. Egg, \$12.50; stove, \$12.80; nut, \$12.85; pea, \$11; buckwheat, \$8.50.

Prices vary a little in bituminous. Youghiogheny and Hocking are the same as last quoted: Lump, \$6.50, run of pile, \$5 to \$5.25 and screenings \$4. The screening market is weak, however, and lower levels are being quoted by some. Splint has strengthened slightly thus: Lump, \$7.50; run of pile, \$6.50; screenings, \$5.25. Kentucky: Miller Creek lump, \$9.50; screenings, \$5.75. Elkhorn lump, \$8.50; run of pile, \$7.25; screenings, \$5.25. Pocahontas is in demand at \$10 for lump, \$7.25 for mine run and \$6.25 for screenings. Smithing is at \$8.

The coal market at Milwaukee is in a more satisfactory condition than it has been for some time, because of fear of a strike in the anthracite field. There is an increasing number of orders for anthracite and for Pocahontas and the domestic grades of bituminous coal. Steam coal is being taken a little more freely, but in small lots. There seems to be no disposition on the part of large consumers to stock up. Prices continue unchanged. The movement by lake to this port has slackened to some extent.

Western Trade Is Spotted

In the Southwest market centering in Kansas City there are signs of the clouds breaking but everybody realizes the coal trade will have to wait at least until the end of the month for trade to regain normalcy. No bills are still on tracks but they are fewer. No changes in bituminous prices have been made but Arkansas semi-anthracite advanced 50c. Aug. 1 to \$6.50 for lump.

In Utah trading is still lifeless except for a little business in the largest cities where dealers have been stocking. Other yard men feel no fear of the car shortage the trade foresees. Industrial coal demand is modest but sugar companies will begin buying for storage soon. Demand for slack at the low prices of \$1.25@\$1.50 is light.

Demand Slightly Better in Ohio

A slightly better demand for all grades, particularly domestic, developed in the Columbus market. Retail dealers in the larger cities are the heaviest buyers, as rural dealers are unable to move much stock owing to the farming season. Householders who heretofore have hesitated before putting in their winter supply of coal are now showing a disposition to fill their bins believing that prices have reached the bottom. Steam business is showing some briskness, with buyers picking up bargain coal. One of the best features of the market is the activity in school coal. The market for run-of-mine and slack at Cincinnati seemed to have improved slightly during the week. Rejections have fallen off to a considerable degree. This has resulted in a slackening of the amount of distress coal that has to be faced. Accumulations at the various railroad yards have

been reduced. There has been a falling off in the orders for domestic bituminous coals as compared with a month ago. On the other hand the lake business seems to have grown a bit better. River business during the week was good. West Virginia 2-in. lump was quoted at \$2.75, as compared with \$2.50@\$2.75, and Southeastern Kentucky 2-in. lump at \$2.50@\$2.75, as compared with \$2.40@\$2.75. Inquiries in the Cleveland market for steam coals slid off a trifle, operators and jobbers say, but that there was more activity in the retail trade. The holding off on the part of steam coal buyers is based upon general trade conditions and the fact that the supply of steam coal in the middle west will be ample for some time.

The principal development in West Virginia coals has been a slight increase in demand, attributed solely to the present status of the anthracite wage negotiations. Production of smokeless coals is large.

Steam coal has been gradually stiffening in the Pittsburgh district, as well as in the Bessemer and the Connellsville districts. There is no material change in the volume of demand, and buyers continue to be as cautious as heretofore. The closing of some of the smaller mines, especially those that had to sell their coal in the spot market, caused the betterment, enabling the larger producers, whose output has been increasing to maintain a better front. Numerous inquiries are being received by the Central Pennsylvania operators, together with contract offers for the balance of the year. However, operators are not willing to tie up at present prices, most of them being willing to take chances on the open market. The Buffalo market remains quiet. Industrial business is dull and consumers are not adding to their stocks of coal.

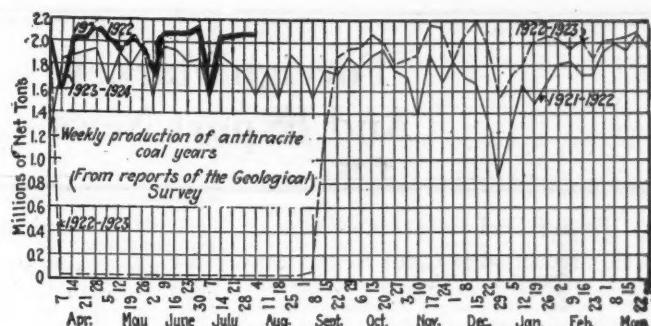
Steam Trade in New England Quiet

In New England the steam trade is practically at a standstill. Except for small purchases there is no buying and shippers are patiently waiting for the long desired turn. The industries here are mostly on short time and consumption for July and August will be far behind expectation. Receipts of the period from January 1st have been greater than for any year since 1918 and when light business and the inroads of oil are considered it is clear there will be only dull business for the next sixty days.

All-rail inquiry is extremely light. Most of the mines producing medium to light grade coals are shut down for much of the time and even those operators who considered themselves amply supplied with contract business through the summer are offering coal for August delivery. Prices are unchanged; the various interests set them at as low a figure as they could justify as early as June 1st and under present conditions there is small inducement to make sales at less than cost.

At the Hampton Roads piers there is a minimum of tonnage on cars. The smokeless agencies are adhering closely to their policy of not mining in advance of sale, and while prices are quoted with reasonable firmness at \$5.25@\$5.50 for Navy standard grades, it is realized that this range is nominal and that little coal is actually changing hands.

Among retail dealers and in the trade generally there is little interest in any movement to use bituminous as a substitute for anthracite. Consumers in this territory are so constituted that they will not as a rule show any willingness to take bituminous more than a day or two ahead of actual necessity. It would therefore need to be a very serious



emergency before even choice low volatiles would be used in households, as was abundantly shown during last winter.

New York Tidewater Market Dull

Consumers of soft coal in the New York market are making no apparent effort to add to their stocks. The New York harbor is well cleared of distress coal and there is very little offered now. Inquiry for coke is on the increase. The Philadelphia market is quiet, although it is believed the situation in the anthracite regions has induced some of the smaller users of soft coal to take in an extra car or two. The large consumer however, still clings to the belief that he will be able to get all the coal needed when his time to buy comes along. Baltimore complains of lack of business, and no improvement was noticed at Birmingham. Business at the latter place is practically at a standstill. Contract mines are in better shape than those not having such obligations and are working more regularly. The domestic trade is quiet.

Several new inquiries for export coal were reported in the New York market, some involving gas coal to France and others New River product to Norway. The export situation is the most important at Baltimore. One-third of the vessels leaving Baltimore during July were consigned to Canadian ports. These vessels took one-third of the coal shipped from that port during the same period. During the past three months Canada has taken from Baltimore 91,603 tons of cargo and bunker coal.

A fair tonnage of coal is going from the Ohio mines to the Head-of-the-Lakes, while there is some congestion at some of the lower ports. The lake trade at Buffalo is active but not up to that of 1921, loadings in July amounting to 516,500 net tons, as compared with 665,101 tons in the corresponding month of 1921.

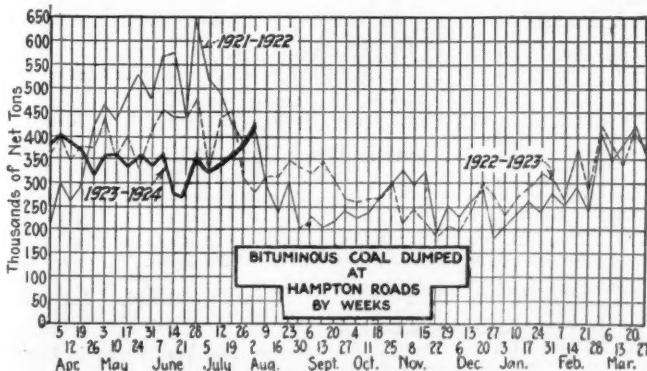
Increased Demand for Anthracite

The demand for anthracite domestic coals gradually increased, while retail dealers are calling on producers for larger shipments. Although there is a feeling there will not be a suspension consumers continue to be anxious about getting their winter coal into their cellars. Quotations for independent coals are strong and while some of the smaller operators are reported as asking around \$13.50 for egg, stove and chestnut, the general range seems to be around \$13. The steam coals at New York and Philadelphia are in better shape. The Baltimore dealers are being urged for deliveries by consumers.

"Production of anthracite continues at a high rate, in excess of 2,000,000 tons per week," says the Geological Survey. "The estimated total output during the week ended July 28 was 2,080,000 net tons."

Production of coke during the week ended July 28, says the Geological Survey, is estimated at about 361,000 net tons, as against 360,000 tons the previous week. The cumulative output of beehive coke during the present year amounts to about 11,543,000 net tons.

Car Loadings, Surpluses and Shortages



Week ended July 21, 1923.....

Previous week.....

Same week in 1922.....

	Cars Loaded
All Cars	Coal Cars
1,028,927	190,788
1,019,667	193,831
845,548	72,420

	Surplus Cars
All Cars	Coal Cars
79,710	5,167
203,322	141,430
84,210	4,865
7,891	3,676
5,574	2,700

Foreign Market And Export News

British Coal Output Falling

Coal production in Great Britain continues to decline. The output for the week ended July 21 is reported as 4,600,000 tons, says a cable to *Coal Age*, a decline of 442,000 tons from the previous week, and of 1,197,000 tons since May 19 when it was 5,797,000 tons. Part of the decrease is attributed to the Scotch holidays.

The Welsh coal market is in an undecided state; demands have improved but are not heavy; shipments have declined and recent good weather has led to holiday making and consequent reduction of output. The French State Railways have placed contracts for 30,000 tons, and other orders are from the Norwegian whaling fleet, and the Italian and Australian Governments. It is impossible to meet the demand for anthracite.

The Newcastle market is erratic and accumulated coal is being offered at a discount. Present prices are not being accepted for forward contracts. A number of contracts have been made for August and later delivery.

French Coal Demand Strong

Demand is strong for all grades of French coal. Output is slowly increasing. While the collieries of the Nord and Pas de Calais have very little available supply on hand, their full production being almost insufficient to take care of contracts already placed. Demand for industrial coals is heavy enough to meet the output.

Retail dealers have difficulty in securing additional supplies. comparatively little Belgium coal is coming forward. Imports from Great Britain continue satisfactory.

Hampton Roads Situation Improves

Business at Hampton Roads last week was fair, though prices showed a tendency to weaken on the spot. Coastwise trade was comparatively dull, but bunkers and exports held firm.

General coal movement over the piers showed a decided increase, following a lull during June and July. Shippers watched the tendency of the foreign business to increase and viewed the entire situation with optimism in

spite of rumored impending difficulties in the fields.

Shippers expected coastwise movement to begin taking on its usual fall activity, with big business in prospect for the next few months.

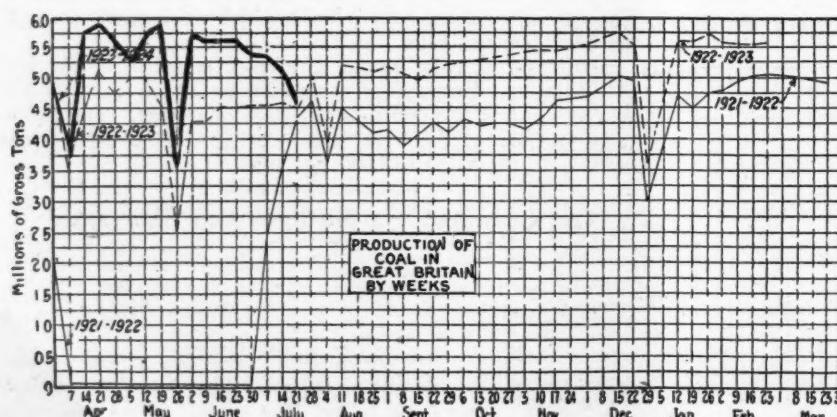
French May Imports and Exports

French imports of coke and briquets and exports of coal, coke and patent fuel in May and for the first five months of 1923, according to French Customs returns, follow, in metric tons:

	May	Jan.-May
Coke:		
Sarre.....	26,192	39,968
Great Britain.....	47,441	270,578
U. S.....	76,696	87,726
Belgium.....	23,472	184,550
Netherlands.....	23,214	136,934
Germany.....	184,416	573,567
Czecho-Slovakia.....	1,051	28,311
Other countries.....	143	146
Totals.....	382,625	1,321,780
Briquets:		
Great Britain.....	19,277	62,327
Belgium.....	21,515	169,692
Netherlands.....	2,257	9,448
Germany.....	15,624	64,876
Other countries.....	46	428
Totals.....	58,719	306,721

EXPORTS

	May	Jan.-May
Coal:		
Belgium and Luxembourg.....	91,130	578,307
Switzerland.....	41,060	127,506
Spain.....	231	794
Italy.....	3,769	49,223
Germany.....	131	39,781
Sarre.....	64,703	131,683
Other countries.....	4,793	26,528
Bunkers { to French str.....	23,108	68,555
Bunkers { to foreign str.....	3,188	17,175
Totals.....	232,113	1,039,552
Coke:		
Belgium and Luxembourg.....	1,084	3,173
Switzerland.....	8,985	33,616
Spain.....	232	1,142
Italy.....	21,785	94,430
Germany.....	0	1,560
Other countries.....	1,355	9,041
Totals.....	33,441	142,962
Patent fuel:		
Belgium and Luxembourg.....	640	6,168
Switzerland.....	12,808	75,410
Italy.....	157	7,239
Algeria.....	20	8,403
Germany.....	0	4,950
Other countries.....	3,274	15,922
Bunkers { to French str.....	208	2,411
Bunkers { to foreign str.....	2	238
Totals.....	17,109	120,741



Export Clearances, Week Ended
Aug. 4, 1923.

FROM HAMPTON ROADS

For Africa:	
Swed. SS. Adolf, for Bathurst.....	2,885
For Belgium:	
Ital. SS. Vincenzo Florio, for Antwerp	9,322
For Brazil:	
Br. SS. Northlea, for Pernambuco.....	4,540
For Canada:	
Br. SS. Reindeer, for Sydney, N. S....	4,803
Nor. SS. Ottawa, for Halifax.....	3,634
Nor. SS. Albatross, for Montreal.....	4,577
For Chile:	
Amer. SS. Argosy, for Valparaiso.....	3,011
For Cuba:	
Swed. SS. Ivernia, for Havana.....	2,599
Amer. Schr. B. S. Taylor, for Ensenada de Mora	1,177
For Holland:	
Ital. SS. Ansaldo VII, for Rotterdam	2,906
Du. SS. Aldebaran, for Rotterdam.....	11,253
Nor. SS. Arna, for Rotterdam.....	8,592
Jap. SS. Egypt Maru, for Rotterdam	9,501
For Santo Domingo:	
Br. SS. Saint Patrick, for Puerto La Plata.....	5,750
For Sweden:	
Nor. SS. Jethou, for Stockholm.....	5,971
For West Indies:	
Swed. SS. Braecia, for Curacao.....	4,885
Nor. SS. Jacob Christensen, for Fort de France	5,536

FROM BALTIMORE

For Canada:	
Br. SS. Cyndie Queen	6,499
Br. SS. Lingan	7,467
Nor. SS. Alfred Nobel	4,145
Br. SS. Magdala	7,588
For France:	
Span. SS. Gorbea Mandi	6,922
For Germany:	
Ger. SS. Eisenach	2,590
For Holland:	
Nor. SS. Hallgyn	9,338
For Italy:	
Jap. SS. Vancouver Maru	8,847

FROM PHILADELPHIA

For Canada:	
Br. Schr. Gov. Parr, for Halifax.....	
For Cuba:	
Br. SS. Turner, for Havana.....	
PIERS	
N. & W. Piers, Lamberts Pt.: July 26	Aug. 2
Cars on hand.....	1,246
Tons on hand.....	72,405
Tons dumped for week.....	124,907
Tonnage waiting.....	9,850
Virginian Ry. piers, Sewalls Pt.:	
Cars on hand.....	1,843
Tons on hand.....	108,870
Tons dumped for week.....	109,349
Tonnage waiting.....	30,653
C. & O. piers, Newport News:	
Cars on hand.....	1,334
Tons on hand.....	59,100
Tons dumped for week.....	115,967
Tonnage waiting.....	26,640

Pier and Bunker Prices, Gross Tons

	July 28	Aug. 4†
Pool 9, New York.... \$5.25 @ \$5.75	\$5.35 @ \$5.85	
Pool 10, New York.... 4.90 @ 5.25	4.90 @ 5.25	
Pool 11, New York.... 4.75 @ 5.00	4.75 @ 5.00	
Pool 9, Philadelphia.... 5.20 @ 5.70	5.30 @ 5.80	
Pool 10, Philadelphia.... 4.35 @ 5.20	4.60 @ 5.30	
Pool 11, Philadelphia.... 3.70 @ 4.35	4.10 @ 4.70	
Pool 1, Hamp. Roads.... 5.40 @ 5.50	5.25	
Pool 5-6-7, Hamp. Rds.... 4.25 @ 4.50	4.50	
Pool 2, Hamp. Roads.... 5.10 @ 5.20	5.00	
BUNKERS		
Pool 9, New York.... 5.55 @ 6.05	5.65 @ 6.15	
Pool 10, New York.... 5.20 @ 5.55	5.20 @ 5.55	
Pool 11, New York.... 5.05 @ 5.30	4.80 @ 5.30	
Pool 9, Philadelphia.... 5.65 @ 5.95	5.70 @ 6.05	
Pool 10, Philadelphia.... 4.75 @ 5.55	4.90 @ 5.55	
Pool 11, Philadelphia.... 3.90 @ 4.65	4.35 @ 5.00	
Pool 1, Hamp. Roads.... 5.40 @ 5.50	5.35	
Pool 2, Hamp. Roads.... 5.10 @ 5.20	5.15	

Current Quotations British Coal f.o.b. Port, Gross Tons

Quotations, by Cable to <i>Coal Age</i>	
July 28	Aug. 4†
Admiralty, large.... 30s. @ 31s.	30s. @ 32s.
Steam smalls.... 20s. @ 22s.	20s. @ 21s.
Newcastle:	
Best steams..... 25s. 9d. @ 26s. 6d.	25s. @ 27s.
Best gas..... 28s.	27s.
Best bunkers..... 26s. @ 27s.	26s.

† Advances over previous week shown in **heavy type**, declines in **italics**.

News Items From Field and Trade

ALABAMA

At a recent meeting of the board of directors of the New Castle Coal Co., Birmingham, Harold McDermott was elected to a vice-presidency. He will continue to serve as secretary-treasurer, a position which he has held for a number of years.

Moss & McCormick, Birmingham coal operators, were the successful bidders in the leasing by the federal government of 1,840 acres of coal lands in Fayette County, the first lease given by the government in Alabama. Under the terms of the agreement the purchase price of the lease was \$85,000, one-fifth of which was paid in cash, the balance to be paid in thirty days. The lessees guarantee the government a royalty on a minimum yearly output of 20,000 tons at 10c per ton. These lands carry the Black Creek seam of coal, an excellent steam product as well as domestic fuel. There was only one other bidder, the Galloway Coal Co. It is understood that the owners of the lease expect to begin extensive development in the near future.

Arrangements are being made by the Tennessee Coal, Iron & Railroad Co. to construct an aerial railway connecting its ore mines with its works and those of its subsidiaries at Fairfield. This railway will result in great savings in freight charges and also expedite the movement of raw material. The work, it is estimated, will cost from \$3,000,000 to \$4,000,000.

COLORADO

J. R. Lemist, pioneer assistant sales manager in the wholesale department of the Colorado Fuel & Iron Co., on account of health and at his own request has been transferred to the Los Angeles office of the company, which has just been reopened. Mr. Lemist will have charge of the sales on coal, coke and steel in that territory. **Douglas Millard**, who also has been an assistant sales manager, now has charge of the wholesale department of sales at headquarters in Denver.

State Coal Mine Inspector James Dalrymple's June report shows the tonnage for the state's June production to be 756,557, making the total for the first six months of the year 5,027,151, an increase of 707,843 tons over the same period last year. The coal mining industry employed 11,387 men in June, something less than the average of 13,018 for the year. Fifteen counties report larger production, Las Animas leading with 249,001 tons more than last year, and five counties report smaller production.

The Big Four Coal & Coke Co. is making several improvements in its state mines, near Erie. The tipple is being remodeled and the shaft enlarged.

Dr. E. T. Devine, U. S. Coal Commissioner, will spend the greater part of August traveling among the Rocky Mountain and Pacific Coast fields representing the U. S. Coal Commission. The only definite dates so far settled are Aug. 3-4 in the Trinidad, (Colo.) field and Aug. 11-12 in Carbon County (Utah) field. Dr. Devine will attend the annual inter-company first-aid contest and picnic of the employees of the Colorado Fuel & Iron Co. and will address the employees there. From Utah he will proceed to Rock Springs and thence to the Washington coal fields. On his way East late in August he expects to visit the Roundup field in Montana.

ILLINOIS

The Hamilton-Lester Coal Co. of Marion, has instituted suit in Williamson County, for \$17,675 for damages to its mine during the riots of last June. Charles F. Hamilton, president of the company, filed the suit. This is not the same Lester Coal Co. mine at which the riot occurred, when 22 non-union workers were killed, but is a smaller property located nearby.

Charles M. Moderwell, president of C. M. Moderwell & Co., of Chicago, a well-known coal wholesale concern, has been appointed to the Chicago Board of Education.

tion and was elected chairman by the board at its organization meeting May 23. The board has been in bad odor in Chicago under the régime of Mayor William Hale Thompson so that the new Mayor, William E. Dever, accepted the enforced resignations of the majority of the members and replaced them. Mr. Moderwell is confronted with a big job for the public good.

The mine of the Paradise Coal & Coke Co., at Paradise, has resumed operations after several weeks shut down for repairs.

The Tamaroa-Little Muddy mine at Tamaroa has resumed work after a suspension caused by a cave in around the top of the shaft due to excessive rains several weeks ago.

Announcement is made by the Pure Carbon Co., Wellsville, N. Y., of the appointment of a Chicago representative, John Nangle, 184 West Washington Street, where he will give personal engineering service on all brush problems and requirements in this territory.

James Robertson, superintendent of the Du Quoin mine-rescue station, is to be one of the judges for the national first-aid contest to be held at Salt Lake City, Utah, the latter part of August. The judges for this contest are appointed by the federal department of mines and only men with the highest ability and experience are chosen.

The mine of the Missouri-Illinois Coal Co. at Rentchler Station, near Belleville, has been closed by State Mine Inspector James R. Richards and County Mine Inspector W. A. Wilson. The mine was closed because of the absence of a means of escape for men up the air shaft of the mine. Sometime ago the steps in the air shaft of the mine were removed for repairs and for some reason were never replaced.

Many mines in the Standard field are shut down and those which are still working are only operating from one to three days per week. Following is list of mines in the Belleville district which are not working at present, Belleville, 5; Collinsville, 2; Freeburg, 2; O'Fallon, 2; Marissa, New Athens, Lenzburg, Lebanon and Breece, one each.

INDIANA

The Metzner Bros. Coal Co., Fort Wayne, has filed a preliminary certificate of dissolution.

Elmer Pope of Linton, has been appointed receiver of the Kathleen Coal Co., which operates a mine in Greene County. Suit for receiver was filed in Superior Court in Vigo County.

Alfred Kauffmann, vice president of the Link-Belt Co. and general manager of its Indianapolis plants, was elected a director of the Fletcher Savings & Trust Co., recently.

The Big Bend Coal Co. has been incorporated to mine and deal in coal at Brazil. It has a capital of \$150,000 preferred and 750 shares common, no par. The directors are Louis Clements, Rowland Rowland and John Magenhardt.

John Stevly and Sam Wilton, deputy mine inspectors, announced recently that their investigation had shown that J. E. Padgett, engineer, was not responsible for the accident at the Vermillion Co.'s mine, near New Goshen, July 20, in which thirteen men were injured, one fatally, when the cage fell 125 ft. to the bottom of the shaft. The inspectors found that six set-screws in the balancing plate in one of the cylinders were loose and prevented proper compression so that when the engineer threw the lever to check the descending cage it failed to hold.

The Crawford & McCrimmon foundry and machine shops, Brazil, operated by a receiver for several months, are in the hands of Brazil stockholders and a reorganization will be effected, putting the factory on a better financial footing. A receivership, which was the result of a petition of Edward Shirke, of Terre Haute, a stockholder, was dismissed in the Vigo Superior Court with the settlement of all claims against the company. The company manufactured mine engines, mine pumps and mine fans extensively.

Asserting that he was dragged from his home in Jasonville in the spring of 1921 by a group of miners because he engaged in work forbidden by the Jasonville local, that he was threatened with death and hanging and driven from his home with the threat of death if he returned, **James Gatherum** filed suit in federal court July 24, asking damages of \$50,000 and an injunction against interference with his work and home life. The suit is brought against Merritt Myers and thirty-two members of Local No. 24 of the United Mine Workers.

KANSAS

The second step toward putting an end to "Progressive Miner" radical activities in the Kansas district was taken June 27 by the district board of District 14, United Mine Workers, when it gave the names of U. M. W. A. members active in the "Progressive" meeting at Franklin, May 29, to their respective locals for action. The board suspended all members who attended the Franklin meeting shortly after it was held. This action was upheld by the international board at its recent meeting at Indianapolis. The locals will be required to try the men whose names were submitted to them. If the suspensions by the district board are upheld, the only recourse of the suspended miners will be to the international executive board to obtain reinstatement.

KENTUCKY

The Rainbow Coal Co., Louisville, capital \$25,000, has been incorporated by Charles D. Salyers, F. S. Salyers, and Donald B. Salyers. The liability limit is placed at \$100,000.

The Glidden-Decker Coal Co., of Barbourville, has increased its capital stock from \$10,000 to \$50,000.

The Hampton Coal & Phosphate Co. has been incorporated in Livingston, by George Hamburg, R. L. Crawford and E. M. Nelson.

The Louisville Times in a recent editorial highly complimented the work of Willard Rouse Jillson, director of the Kentucky Geological Survey, and recommended that the department, which has been starved for money to carry on its work, be given funds with which to carry out its work.

Mayor Houston Quinn, Louisville, has named Louisville delegates to the American Mining Congress and national exposition of mines and mining equipment, Milwaukee, Wis. Sept. 24 to 29. The men named include F. M. Sackett, R. C. Twy, H. H. McBratney, Kenneth U. Meguire, C. D. Glass, M. G. Sackett, C. E. Reed, M. S. Barker, H. T. Carmichael and W. L. Caldwell.

A report to be submitted by the U. S. Engineers of this section shows that a material increase in river traffic was noted on the Kentucky River during 1922. Much of this increase has been due to efforts of the Inland Waterways Co., Louisville, which operates mines on the Kentucky river, and a fleet of boats, bringing coal and oil down to the Ohio River, for transportation in larger tows to both upper and lower river points.

William Scroggins has been released from custody at Hartford in connection with the shooting of Opal Wells, son of a prominent coal operator. Charles Scroggins, uncle of William Scroggins, a coal miner and garage mechanic, has been held under bond of \$1,000 for the Grand Jury. Evidence showed that the shooting was in self-defense, Wells having drawn a gun and started the shooting.

The St. Bernard Mining Co., of Madisonville, is starting to spend some money on its retail yards. The Nashville (Tenn.) yard has been improved, while the Paducah, Ky., yard is being enlarged, and will have a coal unloading trestle. At Louisville Manager W. B. Gathright has started work on a trestle at the Logan Street yard, and will also install one at the Kentucky Street yard, which will be enlarged. Under the trestles the yards will be concreted, and equipped with retaining walls, and loading to trucks will be handled by portable conveyors.

MASSACHUSETTS

Fuel Commissioner Eugene C. Hultman of Massachusetts warns consumers that in order to protect themselves against the consequences of a strike in the anthracite mines they should begin to put some bituminous coal into their bins. In spite of the brisk buying by consumers, Mr. Hultman says, the stocks on hand in the dealers' yards have increased nearly 100 per cent since April 1. At that time there were on hand 181,887 net tons. During April, May and June 1,523,790 tons was received. In

the same three months the dealers delivered 1,344,634 tons, leaving a balance on hand July 1 of 361,049 tons. "At the present rate of receipts," Mr. Hultman points out, "we should receive a total of about 1,000,000 tons of domestic anthracite in July and August. It is therefore evident that Massachusetts cannot physically receive more than one-half of its year's requirements of anthracite before Sept. 1."

Mayor Curley of Boston has sent Frank P. Rock, superintendent of the supply department, to Pennsylvania, to make arrangements to buy 25,000 to 50,000 tons of anthracite for Boston. In his order to Mr. Rock, the Mayor said: "The best interests of the people of Boston require that precautionary measures be taken in the event that the city, for the protection of the public, is again required to engage in the purchase, sales, and distribution of coal." In that the substitution of oil for coal has reduced the needs of city departments, only about 5,000 tons of anthracite will be required for municipal buildings, and about 100,000 tons of bituminous, against the former total of about 160,000 tons purchased annually. Mr. Rock's errand, however, is to provide for Boston householders.

MICHIGAN

The Cooper Coal Co., a newly organized corporation with a capital stock of \$500,000, announces it will drill in several townships near Saginaw and will work at least three mines soon. Otto L. Dittmar is president.

MINNESOTA

At the National Smoke Prevention Association convention in Minneapolis recently, B. J. Mullaney, former Commissioner of Public Works of Chicago, said that of the nation's fuel bill of three billion dollars a year, 95 per cent is wasted in unburned gases, smoke and sediment. He suggests that the substitution of gas fuel burned in its raw state will save 65 per cent, and the electrification of the railroads will save the remainder. Lignite also was given favorable mention as a smokeless fuel by W. A. Pittsford, chairman of the public service committee.

MISSOURI

The Mound Valley Coal, Gas and Oil Co. has been incorporated at Beldon, and will prospect for coal and other minerals. Its capital stock is \$100,000 and its incorporators are Arthur Hesse, W. Marseillon and A. A. Neimeyer.

Fred Wreidt, who recently opened a coal shaft on an 80-acre farm southwest of Bevier, has disposed of his holdings to a Bevier coal company which is leasing more acreage. The company will run a railroad spur to its new holding and will equip it electrically.

The Riverside Coal & Iron Co. has been incorporated with a capital of \$250,000. The company is headed by Edward F. Golarra, Democratic national committeeman, who has recently acquired control of the government fleet of barges on the Mississippi River. The purposes of the corporation are to manufacture and sell iron, steel, coke, etc.

Robert Carr and associates have leased the Reese coal mine near Rich Hill. The plant has been cleaned up and has been put back in operation. When the mine was closed down some time ago 50 miners were employed there. Reese goes to Illinois to become manager of the McComb mine property near Danville.

MONTANA

The largest coal lands lease in Montana in recent years has just been made by the government to Lyman L. Miller of Lead, S. D. The lease covers a 1,600-acre tract in Carbon County near Joliet containing the Bridger seam.

NEBRASKA

Another vein of coal has been discovered in the southwestern part of the state, near Auburn. Many veins have been found in that locality and one southeast of Pawnee City has been mined for several years with profit.

NEW YORK

A certificate of incorporation has been filed in the office of the Secretary of State at Albany by the **Hickory Grove Coal Mining Corporation**, Rochester. The directors

are William O. Boswell, 91 Berkley Street, Rochester; Jacob M. Floesch, 3 Argyle Street, Rochester, and Lawrence H. Fitch, 550 Park Ave., Rochester.

Bids will be received until 2 P.M., Aug. 13, by The United Shipping Board, New York City, for furnishing bunker coal for the vessels of the United States Lines at the Port of New York, for eight months from Aug. 25 and alternately for one year. Coal to be furnished must be Pool 1, Pennsylvania or West Virginia, or coal from the mines now in the U. S. Navy acceptable list. The bidder must be prepared to furnish not more than 15,000 tons per month and must give price f.a.s. New York harbor.

C. E. Tuttle, president of the Tuttle Coal Corporation of New York City, resigned as a director of the Pittsburgh & West Virginia Ry. at a meeting of the Board of Directors held on Aug. 2 and was elected president of the Pittsburgh Terminal Coal Co. A. W. Calloway, formerly president of the Pittsburgh Terminal Coal Co., was elected chairman of the board. W. C. Atwater, of New York, was elected to succeed Mr. Tuttle on the Board of Directors of the railway company.

W. A. Marshall & Co., of New York City, have taken over the output of the Fort Grand mine of the Fort Grand Coal Co., at Lowesville, W. Va., and will market that coal. The mine has an output of about twenty cars per day.

NORTH DAKOTA

Major Stanley Washburn, of Lakewood, N. J., president of the North Dakota Lignite Coal Operators Association and vice-president of the Washburn Lignite Coal Co., in a recent address to bankers at Bismarck, declared that North Dakota this year will mine and sell 2,000,000 tons of lignite coal and in 1933 the state should be mining for its own use and for export between 10,000,000 and 15,000,000 tons of coal. He said that with the backing of the bankers the development of the lignite mines could be carried forward with amazing swiftness.

OHIO

The Black Diamond Coal Mining Co., Cincinnati, has been incorporated with a capital of \$100,000 to mine and sell coal, coke and minerals. Incorporators are W. B. Cramer, L. N. Birk, Calvin Cramer, N. C. Kelly and Arthur W. Gordon.

Suit has been filed at St. Clairsville, county seat of Belmont County, by the Central National Bank Savings & Trust Co., of Cleveland, against the Belmont Collieries Co., for the foreclosure of a mortgage covering \$355,000 in bonds, the plaintiff being the trustee.

The International union of the United Mine Workers has revoked the charter of the local union at the Big Run mine, south of Bellaire. The revocation was made at the request of President Lee Hall, of Ohio, according to an announcement at the headquarters of sub-district 5, following refusal of the members to return to work at the Big Run mine. Several weeks ago the miners at Big Run engaged in a strike, which was declared by sub-district officials to be illegal and without the sanction of the union. After a protracted conference, however, an agreement was reached and the miners resumed work, but went out again when \$1 was checked off their pay as a penalty for the illegal strike. The membership of 331 miners in the union is affected by the revocation of the charter.

Buying of coal for public utilities, institutions and governmental departments will soon be in full swing in Columbus and Ohio. Bids have been asked for 3,500 tons of coal by the County Commissioners, of which 1,000 tons are for the court house, 2,000 tons for the county infirmary and 500 tons for the Memorial Hall. This will be either mine-run or lump. State Purchasing Agent J. P. Brennan will soon ask for bids for between 150,000 and 200,000 tons of coal for the various state institutions under the charge of the Department of Public Welfare. Only Ohio-mined coal will be purchased and specifications provide for either mine-run or nut, peat and slack. Steps will be taken to obtain a large part of the supply immediately upon the award of the contracts, as storage space for 100,000 tons is available. The Columbus City Council has authorized the purchase of approximately 22,650 tons of coal for the municipal light plant, water works department and garbage reduction plant. The supply is to last for the remainder of the current year.

OKLAHOMA

Test holes near Porter show a 20-in. bed at a depth that will permit stripping.

The Crowe Coal Co., of Henryetta, has closed its mine, known as Whitehead No. 2, one of the oldest mines in the Henryetta district and one of the best producers. No explanation is given for the shutdown, except that there is no demand for the total output, and that production must be curtailed.

The Calvert Coal Co., of Rockdale, has sold its lignite mines and 300 acres of land underlaid with lignite, situated two miles east of Rockdale, to the Sparks Coal Co., of Rockdale. The consideration involved in the transaction is withheld. The property is developed to the extent that two shafts are now being worked, and the output is about 200 tons a day. The Sparks Coal Co. now owns some land at Hicks, eight miles south of Rockdale, on which it has been working one shaft. The Sparks company announces that it will at once undertake to develop the Calvert property.

PENNSYLVANIA

The Bethlehem Steel Corporation has under consideration the erection of two more batteries of coke ovens at Johnstown. These will be of the type required to fit in with those recently erected.

Harry Montz, formerly connected with the general manager's office of the Lehigh Valley Coal Co., recently was appointed mining engineer for the company with office in Wilkes-Barre.

Notices of the charge of \$1 a month dues, abolition of the button system and the bonding of local officers in District 1, United Mine Workers, have been mailed out from the district headquarters by District Auditor John Gallagher of Wilkes-Barre. The action on these matters was taken at the tri-district convention in Wilkes-Barre.

The Glen Alden Coal Co. is rapidly preparing its newly acquired shop and foundry for occupancy by its general repair and construction departments. The new shop is located in West Pittston and formerly was owned by the Exeter Machine Works.

The Philadelphia & Reading Ry. Co. is offering a prize of \$25 for the best suggestion for fuel conservation submitted by an employee. The offer is made in connection with a contest being conducted by the International Fuel Association for the best plan of railroad fuel conservation, for which \$100 is being offered. The latter contest is open to railroad employees on any railroad and will close Aug. 31.

The City Council of Harrisburg is discussing a small tax on all coal landed along the improved section of the river front. The reclaimed anthracite from the Susquehanna River is brought by boat to the city and the councilmen hold that it is wrong to allow the dredgers the unrestricted use of the river front.

Emil Johnson, Ed Gustafson and Gus Carlson, employed by the Rinn-Sutter Coal Co. at Plumville, near Punxsutawney, were drowned in a narrow manway several hundred feet under the ground on July 30. A terrific downpour of rain sent Plum Creek over its banks and poured thousands of gallons of water into the shaft. The bodies were recovered the next day.

A state charter has been issued to the Keystone Fuel Co., Inc., of Scranton, with a capital stock of \$50,000. S. M. Hawks, Carbondale, is treasurer and one of the incorporators, the others being F. W. Moser, Scranton and James H. Rolles, Olyphant. A charter also was issued to the Portage-Sonman Coal Co., Portage, capital, \$10,000; incorporators, M. M. Griffith, Portage, treasurer; Paul Nelson and H. D. Nelson, Portage.

The Pennsylvania Department of Mines, according to a report made by Secretary J. J. Walsh to the State executive board, is effecting a material saving in administration through changes in allowances to mine inspectors for expenses. Under the plan of concentrating state offices in the Capitol, the department's leased office space in a building at Harrisburg has been given up at a saving of approximately \$5,000 a year. The cutting down of expense allowances will save the State \$17,500 in two years.

One man was killed and three others wounded in a hold-up on a Laurel Line train near Moosic July 30, when the payroll of the West End Coal Co., of Mocanaqua, amounting to \$70,126, was stolen. The dead man was Edward Murphy, of Scranton,

while those injured included Arch Henshall, Scranton, paymaster for the West End Coal Co.; P. J. Durkin, of Scranton, motorman, and Philip Scribner, Thomas Thomas, assistant paymaster of the Coal Co. and Thomas J. Velby and Joseph W. Berwick, coal company guards, escaped injury.

Charles S. Goldsborough, of New York, has been elected president of the Pennsylvania Coal Co. and the Illinois Coal & Iron Co. to succeed Captain W. A. May, who died recently. A. K. Morris will continue as vice president with William P. Jennings and Joseph P. Jennings continuing as superintendents. Mr. Goldsborough for the past ten years has been assistant to F. B. Underwood, president of the Erie R.R. Prior to that he was general superintendent of the New York and Susquehanna R.R. and also was superintendent of the Tioga division of the Erie R.R.

It is unofficially reported that no new state mine inspector will be appointed for the Eighth, or Pittston, district to succeed Robert Johnson, who resigned recently. The collieries of the district have been divided between Inspector McDade, of Rendham, and Inspector Curtis, of Forty Fort, and it is intimated that this arrangement may be made a permanent one. When Chief Walsh took charge of the Department of Mines some months ago it was reported that retrenchments would be brought about by the consolidation of districts. If this new arrangement continues permanently it will be the first time in 30 years that Pittston has been without a resident mine inspector. At one time two inspectors were stationed there.

Insisting that men in its employ shall check their time on the way in and out of the mines led to a strike at two collieries—the Nottingham and Washington of the Lehigh and Wilkes-Barre Coal Co. recently. The checking system is ordinarily known as "pulling your peg." By it the company officials are able to tell exactly how many men are underground and also can identify them. The men oppose it as an attempt to restrict their liberty. They say the last wage agreement said nothing of the check system.

T. R. Johns, general manager of the Bethlehem Mines Corporation, the coal mining subsidiary of the Bethlehem Steel Co., at Johnstown, has made the following appointments in his organization effective Aug. 1: **Samuel Steinbach**, division superintendent of the Johnstown division, becomes assistant general manager of coal mines for all divisions. **Frank Horton** from superintendent of the Johnstown mines to division superintendent of the Johnstown division, which, in addition to the Johnstown mines, includes the Wehrum and Slickville operations. **Duncan May**, mine superintendent of the Rosedale mine, appointed superintendent of all Johnstown mines. **Edwin Roberts**, superintendent of Nos. 73 and 74 mines, will succeed Mr. May as superintendent of No. 72 mine. **Robert Owen Robertson**, foreman of No. 71 mine, will succeed Edwin Roberts as superintendent of Nos. 73 and 74 mines. **George Alberter** has been promoted from foreman at No. 71 to the position of foreman of No. 71 mine. **William A. Thomas**, fireboss at No. 71 mine, has been appointed assistant foreman of No. 71 mine.

TEXAS

The Western Securities Co., of which J. G. Puterbaugh, McAlester, Okla., is president, will develop a 1,330-acre deposit of lignite near Rockdale, which is reported to be from 8 to 15 ft. in thickness.

Dallas retail coal dealers have united in a campaign to urge early buying of fuel for next winter's consumption, it is announced by Harry Pennington, Sr., of Dallas. Mr. Pennington explains that the Dallas coal men have launched this campaign in co-operation with the policies of the various government bureaus "as a matter of insurance, a help to transportation facilities, and an aid in stabilizing the working time of the coal miners."

Resumption of operations on the properties of the Western Securities Co. near Rockdale, Tex., is indicated in the construction of a railroad switch track from the main line of the International-Great Northern to the mine properties. These lignite mines were formerly owned by Federal Fuel Co. and sold to the Standard Coal Co. and then acquired by the Western Securities Co., of which J. G. Puterbaugh, of McAlester, Okla., president of the McAlester Fuel Co. and also president of the Oklahoma Coal Operators' Association, is southwestern representative. The properties embrace a large area of valuable lignite land and two mine shafts. The lignite under

some of the land is sufficiently near the surface for stripping operations to be carried on with profit.

UTAH

The Western Coal & Iron Co.'s affairs have been placed in the hands of the Tracy Loan & Trust Co. as receivers.

VIRGINIA

The case of the Norfolk & Western Ry. against the Pan Handle Coal Co. for collection of demurrage charges alleged to have accumulated during the last four years has been partly settled out of court. Certain portions of the charges were agreed on, the remainder being allowed to pass through the processes of litigation. Fourteen other cases are dependent on the outcome of this suit.

WEST VIRGINIA

The Boone County Coal Corporation, of Sharples, has contracted with the Roberts & Schaefer Co. for a steel tipple complete with loading booms to be installed at its mine at Moncloe.

Fire late in July was responsible for the complete destruction of the repair shops of the E. E. White Coal Co. at Stotesbury, in the Winding Gulf field, the loss amounting to about \$100,000. Almost before the ashes of the old buildings were cool the company had begun the construction of a new and more modern structure to replace the one destroyed by fire.

The Deep Run Coal Co., of Cumberland, Md., is opening a new mine in the Elk Garden district of West Virginia, involving the expenditure of approximately \$300,000 under the direction of Benjamin Robinson, Sr., of Frostburg, consulting engineer of the company. The company is operating in a territory embracing about 2,500 acres, including some very rich coal land. Three mines are already in operation and this concern expects to have the fourth ready for production soon, as the main heading is nearly completed and construction work is far advanced on a new tipple. An 11-ft. incline also is almost ready for use. At the beginning of operations the new mine will have an output of about 500 cars a day, which will be increased as the mine is further developed. One hundred and twenty-five men are at work, but the number will be increased after the new mine begins to operate. The company has a production of about 300 tons a day at its other mines. All the plants of the company are operated on an open-shop basis. The president of the company is C. H. Lantz, of Piedmont, W. Va.; W. R. Nethken, of Cumberland, Md., is the vice-president.

The Dwyer Coal Co., which has been engaged in the production of coal near Coalburg in the Kanawha field for a number of years, is opening a new mine near Chapmanville, where the company recently acquired about 1,000 acres of coal land so located as to make it possible to mine from a rise and thus insure excellent drainage and also to make it possible to handle the coal at a minimum of expense. With a view to securing the largest production possible, the company is building a modern colliery and also attractive quarters for its employees. John G. Dwyer will have charge of the mines.

Arguments were begun in the Circuit Court of Logan County before Judge Robert W. Bland on Thursday, Aug. 2, on a plea for a change of venue for Harold W. Houston, chief counsel for District 17, United Mine Workers, charged with complicity in the armed march on Logan and Mingo counties in 1921. Several months ago Houston was indicted by a grand jury in Logan County as an accessory to the murder of John Gore, George Munsey and John Cafalgo, deputy sheriffs, killed in a skirmish on Blair Mountain. Counsel for the United Mine Workers also are asking for a change of venue for Edgar Combs, alleged to have been a participant in the armed march and who, according to the testimony of the Rev. J. E. Wilburn in the Blizzard case, fired the shot which killed Gore. Although changes of venue were granted in connection with others indicted in Logan County without any resistance on the part of the state, it has been asserted by Prosecuting Attorney John Chafin of Logan County that the state will oppose any change in venue in the case of other defendants, owing to the fact that in every instance where there has been a change of venue an effort has been made through propaganda and otherwise to influence the opinion of potential jurors in the various counties to which the various "armed march" cases have been transferred.

WYOMING

The Secretary of the Interior has directed the U. S. Land Office at Douglas, Wyoming, to offer for lease a tract of public coal land in Wyoming containing 1,720 acres. The land is in the Waltman district of the Wind River coal field in Natrona County. The lease will be at a government royalty of 8 cents per ton for coal mined, a minimum investment in mining operations of \$100,000 during the first three years of the lease, and a minimum production of 15,000 tons of coal a year beginning with the fourth year of the lease.

WASHINGTON, D. C.

The National Coal Association Policy Committee, to serve during the present year, as appointed by President Brydon, is as follows: Walter Barnum, treasurer, Pacific Coast Company, New York; C. E. Bockus, president, Clinchfield Coal Corporation, New York; J. G. Bradley, president, Elk River Coal & Lumber Co., Dundon, W. Va.; J. C. Brydon, president, Quemahoning Creek Coal Co., Baltimore; B. M. Clark, president, Rochester & Pittsburgh Coal & Iron Co., Indiana, Pa.; Ira Clemens, president, Clemens Coal Co., Pittsburgh, Kan.; T. B. Davis, president, Island Creek Coal Co., New York; E. L. Douglass, vice-president, First Creek Mining Co., Cincinnati; T. F. Farrell, second vice-president, Pocahontas Fuel Co., New York; George H. Francis, secretary, Keystone Coal & Coke Co., Greensburg, Pa.; Michael Gallagher, general manager, M. A. Hanna Co., Cleveland; R. H. Gross, president, New River Co., Boston (acting for Mr. Bradley during the latter's absence in Europe); T. W. Guthrie, president, Hillman Coal & Coke Co., Pittsburgh; George B. Harrington, president, Chicago, Wilmington & Franklin Coal Co., Chicago; Moroni Heiner, vice-president, U. S. Fuel Co., Salt Lake City, Utah; John S. Jones, president, Sunday Creek Coal Co., Columbus, Ohio; C. H. Krause, vice-president, Willis Coal & Mining Co., St. Louis; F. W. Lukins, president, Farmers Fuel Co., Kansas City, Mo.; A. M. Ogle, president, Vandalia Coal Co., Terre Haute, Ind.; J. B. Pauley, vice-president, J. K. Dering Coal Co., Chicago; P. H. Penna, secretary, Indiana Bituminous Coal Operators' Association, Terre Haute; P. J. Quealy, president, Gunn-Quealy Coal Co., Kemmerer, Wyo.; H. N. Taylor, president, U. S. Distributing Corporation, New York; D. B. Wentz, president, Stonega Coke & Coal Co., Philadelphia; F. W. Wilshire, vice-president, Consolidation Coal Co., New York, and S. L. Yerkes, vice-president, Grider Coal Sales Agency, Birmingham, Ala.

Obituary

Charles C. Beury, one of the leading operators of the New River coal field, well known throughout southern West Virginia, a pioneer in the smokeless regions, whose early training was received in the anthracite fields of Pennsylvania, died at Lewisburg, W. Va., Tuesday, July 31, after a lingering illness. He was held in such affectionate regard by both those in and out of coal circles that his death, expected though it had been, was a distinct shock. Charles C. Beury had been an operator in the New River field for more than 40 years. In association with his brother, the late Joseph Beury, he had an active part in developing the smokeless fields of southern West Virginia. He was president of the Beechwood Coal & Coke Co. and was also heavily interested in the Turkey Knob Coal Co., the Branch Coal & Coke Co., the Coal Run Coal Co., and also was a stockholder in the Flat Top Coal Co. operating in the Pocahontas field and in other companies in that field. Mr. Beury had been president of the New River Coal Operators' Association in 1918 and 1919 and at the time of his death was a member of the executive committee as well as being treasurer of the association. He is survived by his widow, Bessie A., daughter of former Governor George W. Atkinson of Charleston, and three daughters, Nancy Ellen, Christine and Catherine; one son, Charles C., Jr.

Association Activities

Elijah Coles, recently elected president of the Texas Retail Coal Dealers' Association at the annual convention in Galveston, on his return to Houston announced that

he will soon launch a state-wide campaign to increase the membership of the association, and hopes to have every retail coal dealer in the state become a member. Allocation of the proper kind of cars for moving coal and better routing of cars also will be sought by the association, he said. Mr. Coles expressed the view that retail coal prices are not going up appreciably during the coming winter, nevertheless he urged all householders to lay in their supply of winter coal now.

Reduction in freight rates on coal from some fields, proposed reduction from others and the competition of southern West Virginia coal led to a meeting of the directors of the Northern West Virginia Coal Operators' Association, and representatives of the Monongahela Coal Association, Upper Potomac Operators' Association and the Northern Panhandle Coal Association at Deer Park late in July for the purpose of considering ways and means to meet the competition and disadvantage brought about thereby. It is feared that as a result of the revision in rates much steam coal from West Virginia may be eliminated from the markets of Ohio, Indiana, Illinois and Michigan. The directors at the meeting had the advice and counsel of E. J. McVann, of Washington, D. C., on traffic matters. No announcement was made as to what action it was proposed to take.

Recent Patents

Arch Support for Mines. 1,451,840. Rudolf Novotny, Portage, Pa. April 17, 1923. Filed Jan. 30, 1922; serial No. 532,930.

Drive Chain. 1,451,286. George W. Wilmot, Hazleton, Pa.; assignor to Wilmot Engineering Co., Hazleton, Pa. April 10, 1923. Filed Sept. 1, 1920; serial No. 407,364.

Coal Chute and Apron. H. A. Ernst, Chicago, Ill.; assignor to Roberts & Schaefer Co., Chicago, Ill. 1,444,174. Feb. 6, 1923. Filed May 17, 1922; serial No. 561,702.

Process of Screening Coal. R. G. Lawry, Chicago, Ill.; assignor to Roberts & Schaefer Co., Chicago, Ill. 1,444,195. Feb. 6, 1923. Filed March 4, 1920; serial No. 363,157.

Lubricating Mine-Car Wheels. John M. Cameron, Dorchester, Va. 1,444,234. Feb. 6, 1923. Filed July 27, 1921; serial No. 487,944.

Miner's Cap and Lamp Attachment. W. R. Scott, R. Dubinski, Jr. and P. B. Magidson, Nokomis, Ill. 1,444,278. Feb. 6, 1923. Filed June 28, 1922; serial No. 571,355.

Mine-Car Check Lock. M. L. Caretti, Pittsburgh, Pa. 1,444,330. Feb. 6, 1923. Filed April 8, 1922; serial No. 550,693.

Process and Apparatus for Burning Powdered Coal. A. G. Kinyon, Chicago, Ill.; assignor to Fuller Engineering Co., Allentown, Pa. 1,444,421. Feb. 6, 1923. Filed May 13, 1918; serial No. 234,055.

Jig Plunger. R. W. Rigler, Phila., Pa.; assignor to Guy H. Elmore, Phila., Pa. 1,444,705. Feb. 6, 1923. Filed Sept. 29, 1920; serial No. 413,489.

Controlling System for Mine-Blasting Operations. S. F. Bridwell and J. F. Kennedy, Terre Haute, Ind. 1,444,827. Feb. 13, 1923. Filed May 25, 1921; serial No. 472,590.

Flootation Apparatus. J. P. Ruth, Jr., Denver, Colo. 1,445,042. Feb. 13, 1923. Filed Aug. 16, 1917; serial No. 186,602.

Coal-Loading Machine. J. F. Joy, Belle Vernon, Pa.; assignor to Joy Machine Co., Pittsburgh, Pa. 1,445,084. Feb. 13, 1923. Filed May 28, 1918; serial No. 237,111.

Coal Cutting and Wedging Machine. J. F. Joy, New Bethlehem, Pa.; assignor to Joy Machine Co., Pittsburgh, Pa. 1,445,085. Feb. 13, 1923. Filed Feb. 15, 1919; serial No. 277,177.

Drill. J. F. Joy, New Bethlehem, Pa.; assignor to Joy Machine Co., Pittsburgh, Pa. 1,445,086. Feb. 13, 1923. Filed Feb. 18, 1919; serial No. 277,837.

Coal-Loading Machine. J. F. Joy, Pittsburgh, Pa.; assignor to Joy Machine Co., Pittsburgh, Pa. 1,445,087. Feb. 13, 1923. Original application filed March 27, 1918; serial No. 224,983. Divided and this application filed Jan. 5, 1920; serial No. 349,388.

Gathering Mechanism. J. F. Joy, Pittsburgh, Pa. 1,445,088. Feb. 13, 1923. Filed June 11, 1920; serial No. 388,156. Renewed Nov. 1, 1922; serial No. 598,436.

Method of Producing Coke. J. G. West, Pittsburgh, Pa. 1,445,735. Feb. 20, 1923. Filed Feb. 16, 1922; serial No. 537,088.

Skip Hoist. G. E. Mellin, New York, N. Y. 1,446,813. Feb. 20, 1923. Filed Nov. 12, 1921; serial No. 514,510.

Retarding Brake for Coal Cars. W. C. Richey, Denver, Colo. 1,446,584. Feb. 27, 1923. Filed Nov. 21, 1921; serial No. 516,816.

Hoisting Apparatus. N. D. Levin, Columbus, Ohio; assignor to the Jeffrey Manufacturing Co., Columbus, Ohio. 1,447,025. Feb. 27, 1923. Original application filed Aug. 1, 1913; serial No. 782,522. Divided and this application filed April 10, 1919; serial No. 288,968.

Spring Bumper for Mine Cars. Martin T. Kitchen, Logan, West Va. 1,450,041. March 27, 1923. Filed Feb. 8, 1921; serial No. 443,376.

Kickback Car Dump. C. B. Anfindsen, Charleroi, Pa. 1,453,331. May 1, 1923. Filed Nov. 9, 1921; serial No. 514,010.

Arc-Welding Dynamo-Electric Machine. K. L. Hansen, Wilkinsburg, Pa.; assignor to the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa. 1,453,389. May 1, 1923. Filed Sept. 25, 1919; serial No. 326,294.

Miner's Carbide-Lamp Holder. Edward S. Barnstable, Nokomis, Ill.; assignor of one-half to D. E. Alyward and one-half to John W. Busker, both of Livingston, Ill. 1,454,034. May 8, 1923. Filed Sept. 19, 1921; serial No. 501,801.

Self-Coupling for Mine Cars. James Whewell and H. L. Yoder, Hollsopple, Pa. 1,454,201. May 8, 1923. Filed May 24, 1921; serial No. 472,211.

Breathing Apparatus. Frederick W. Koehler, Pittsburgh, Pa.; assignor to American Atmos Corp., Pittsburgh, Pa. 1,454,645. May 8, 1923. Filed March 29, 1921; serial No. 456,576.

Car-Handling and Dumping System. Richard Peale, St. Benedict, Pa.; assignor to Rembrandt Peale, St. Benedict, Pa. 1,454,602. May 8, 1923. Filed Sept. 12, 1919; serial No. 323,264.

Concentration of Minerals. Walter O. Borchardt, Austinville, Va.; assignor to the New Jersey Zinc Co., New York City. 1,454,838. May 8, 1923. Filed March 19, 1919; serial No. 283,628.

Spiral Separator. Frank Pardee, Hazleton, Pa.; assignor to Anthracite Separator Co., of Pennsylvania. 1,454,904. May 15, 1923. Filed Oct. 11, 1921; serial No. 507,109.

Miner's Lamp. William W. Zickler, Mullan, Idaho. 1,455,130. May 15, 1923. Filed April 10, 1922; serial No. 551,324.

Process for Removal of Water from Colloidally-Dissolved Substances such as Crude Peat, Coal Sludge, etc. Heinz Horst, Uerdingen-on-Rhine, Germany; assignor to Gesellschaft für Maschinen Drucktwasserung mit beschränkter Haftung, Uerdingen-on-Rhine, Germany. 1,455,728. May 15, 1923. Filed May 13, 1922; serial No. 560,709.

Skimming Device for Coal Jigs. Edgar T. Anderson and William Morgan, Scranton, Pa. 1,455,854. May 22, 1923. Filed March 15, 1921; serial No. 452,487.

Dumping Mine Car. Oliver W. Crooks and Elmer H. Crooks, Big Creek, Calif. 1,456,054. May 22, 1923. Filed Dec. 22, 1921; serial No. 524,186.

Mining Machine. Cyrus S. Oldroyd, Cincinnati, Ohio; assignor to the Oldroyd Mfg. Co., Knoxville, Tenn. 1,456,930. May 29, 1923. Filed June 24, 1919; serial No. 306,335. Renewed Oct. 28, 1922; serial No. 597,693.

Publications Received

Geology and Mineral Resources of the Morris Quadrangle, by Harold E. Culver, Department of Registration and Education Division of the State Geological Survey, Urbana, Ill. Extract from Bulletin 43. Pp. 114; 7x10 in.; illustrated; 3 plates.

Godfrey Conveyors. The Godfrey Conveyor Co., Elkhart, Ind. Pp. 20; 8x11 in.; illus. Describes the unloading of coal from bottom dump cars into a chute underneath the railroad track, from where it is conveyed by gravity into a bucket, which in turn is elevated and carried to a storage pile, bin or conveyance.

Taylor's Spiral-Riveted Pressure Pipe. American Spiral Pipe Works, Chicago, Ill. Catalog No. 22. Pp. 75; 8x10 in.; illus. The fore part of this catalog is devoted to a description and letters from companies who have had this pipe in service for lengthy periods, and the latter part gives prices and tables showing flow of water through pipes. The forged joint permits the pipe, regardless of size or length of lay, to follow the contour of the ground.

Traffic News

The recent Virginian decision of the I.C.C. had no influence on the Montana Railroad Commission late in July when it ordered the C. M. & St. P. Ry. to build a 1,500-ft. spur from Roundup yards to the new mine of the Gilbert-Crawford Coal Co. The mine expects to begin at 50 tons a day and attain 500 tons eventually. The road objected on the ground that enough coal was being produced in Montana, that the coal company did not know the exact nature or extent of its deposit and that the spur would have no public value. The coal company asserted that there is a wide market for its output and that the spur would be public. The state commission felt the railroad was refusing rail connection to the mine because "it is a public fact that" the railroad's relations with the competing Roundup Coal Mining Co. "are very intimate."

Alabama railroads will appear before the Public Service Commission, Aug. 23, at a hearing of a proposed new schedule of rates on coal and coke moving between points in the state. The schedule prepared by the commission carries a material reduction in most instances over the tariffs now in effect.

The number of loaded coal cars handled by the Norfolk & Western in June—114,031—was the highest for any month of 1923, yet they were 12 per cent below the tonnage handled by the same road during June, 1922, owing to the fact that there was a large production of non-union coal during the early part of the 1922 strike and before the strike of shopmen put railway equipment out of commission.

Fewer freight cars were in need of repair on July 15 than at any time since December, 1920, according to the Car Service Division of the American Railway Association. The number in need of repair on July 15 was 188,621, or 8.3 per cent of the number on line. This was a decrease of 1,790 compared with the number in need of repair on July 1, this year, at which time there were 190,411, or 8.4 per cent. Class 1 railroads of the United States had in need of repair on July 15, 11,855 locomotives, or 18.6 per cent of the total number on line. This was an increase of 405 over the total number on July 1, at which time there were 11,450, or 18 per cent. The railroads on July 15 had 2,437 locomotives in good repair and stored away to meet increased traffic demands later in the year. This was an increase of 256 over the number in storage on July 1. During the first fifteen days in July 18,290 locomotives were repaired and turned out of the shops.

Coming Meetings

The American Institute of Mining and Metallurgical Engineers will hold its annual meeting in Canada. The meeting will start Aug. 20 at Toronto and end Aug. 30 at Montreal. Secretary, F. F. Sharpless, 29 West 39th Street, New York City.

Rocky Mountain Coal Mining Institute will hold its summer meeting Aug. 27 to 29 at Salt Lake City, Utah, in conjunction with the International Safety and First-Aid Meet. Secretary, Benedict Shubart, Denver.

New York State Coal Merchants' Association will hold its annual convention on Sept. 10-12 at Sacandaga Park, N. Y. Executive secretary, G. W. F. Woodside, 250 Arkay Building, Albany, N. Y.

Oklahoma Coal Operators' Association will hold its annual meeting Sept. 13 at McAlester, Okla. Secretary, A. C. Casey, McAlester, Okla.

The American Mining Congress will hold its twenty-sixth annual convention in conjunction with the National Exposition of Mines and Mining Equipment, Sept. 24-29, at the Milwaukee Auditorium, Milwaukee. Secretary, J. F. Callbreath, Washington.

National Safety Council will hold its twelfth annual safety convention at the Buffalo Statler Hotel, Buffalo, N. Y., Oct. 1-5. Secretary, W. H. Cameron, 168 Michigan Ave., Chicago, Ill.

The West Virginia-Kentucky Association of Mine, Mechanical and Electrical Engineers will hold its annual meeting Oct. 19-20 at Huntington, W. Va. Secretary-treasurer, Herbert Smith, Robson-Pritchard Bldg., Huntington, W. Va.

Coal Mining Institute of America will hold its annual meeting Dec. 19, 20 and 21 at Pittsburgh, Pa. Secretary, H. D. Mason, Jr., Chamber of Commerce Building, Pittsburgh, Pa.